Caribbean Petroleum Refining LP

Groundwater Quality Sampling Results
Underground Recovery System
September 2009

Caribbean Petroleum Refining LP
Bayamon, Puerto Rico
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1.0 Introduction

This report presents the results of the September 2009 groundwater sampling event for the underground recovery system at the Caribbean Petroleum Refining, LP (CPR) facility in Bayamón, Puerto Rico. The groundwater sampling work is being done semiannually according to the interim measures component of a 1995 RCRA 3008(h) Administrative Order of Consent for the facility. CPR retained Anderson-Mulholland & Associates, Inc. (AMAI) to conduct the groundwater sampling and to prepare this report.

The objectives of the groundwater sampling at the underground recovery monitoring system were to:

- Assess any migration of dissolved constituents in the uppermost clayey-sediment and underlying unlithified carbonate sediment water-bearing zones resulting from a free-phase hydrocarbon (FPH) plume in the central part of the facility.

- Assess if the groundwater quality at the northern property boundary has been impacted by the FPH plume.

- Assess the potential impact of upgradient contamination from the FPH plume on the CPR equalization basin, which is being sampled separately as part of the ongoing Sitewide Groundwater Monitoring Program (SGMP) and interim status groundwater monitoring.

1.1 Background Information

The boundary of the CPR facility with respect to the surrounding community of Bayamón, Puerto Rico is illustrated in **Figure 1**. The layout of the facility and locations of general operational areas are illustrated in **Figure 2**.

The facility is located near the boundary of the northern coastal plain and the foothills of Puerto Rico. Topography at the facility is relatively smooth. Land surface elevations range from about

33 ft above mean sea level (amsl) at the southern facility border to about 6 ft amsl at the northern border.

1.2 Groundwater Monitoring System and Sampling Program

The CPR underground recovery monitoring system consists of 131 groundwater monitoring wells. Sixteen of these wells are used for the groundwater sampling program; their locations are illustrated in **Figure 3**. The sixteen wells were selected at locations and depths that would provide information for evaluating potential downgradient migration of dissolved constituents from the FPH plume at the facility. Five of the sampled wells monitor the upper clayey-sediment water-bearing zone (Zone A) and eleven monitor the unlithified carbonate sediment zone (Zone B). The hydrogeology of these zones is discussed below.

Groundwater sampling is performed on a semiannual basis in March and September. Sixteen wells are sampled in March and ten wells are sampled in September. Samples from all the wells are analyzed for volatile organic compounds (VOCs) and dissolved lead. Also, samples from two of the wells (MW-21B and MW-78B) are analyzed for dissolved mercury. **Table 1** presents a summary of the sampling schedule, including the sampling frequency, analyses, and rationale for selection. The U.S. Environmental Protection Agency (EPA) in letters dated March 12, 1997 and September 14, 1998 agreed to the current sampling schedule.

Additionally, as part of the ongoing SGMP, samples from wells MW-20B, MW-21B, MW-75B, MW-76B2, MW-77B, and MW-78B are being analyzed for dissolved arsenic as of March 2004.

Several replacement wells were installed during February-May 2003 as part of the SGMP. Well MW-13B was replaced with well MW-13B2; well MW-15B was replaced by MW-15B2; well MW-16B was replaced with well MW-16B2; and well MW-76B was replaced with well MW-76B2. The rationale for well replacement and the construction details for the wells are provided in the January 2004 SGMP Draft Final Report. In addition, well MW-14A2 was installed during December 2005 as a replacement for well MW-14A, which was destroyed during construction activities.

The wells for the semi-annual sampling program are located with the intention of providing a comprehensive view of contaminant presence and migration at the CPR facility. Wells are

upgradient and downgradient relevant to groundwater flow, as well as within the facility itself. Wells MW-20B, MW-21B, MW-75B, MW-76B2, MW-77B, MW-78B are situated along the downgradient border of the facility. Wells MW-13B2, MW-14A2, MW-14B, MW-15A, MW-MW-15B2, MW-16A, MW-16B2, MW-37A, MW-63A are situated within the interior of the facility. Well MW-18D is situated upgradient of the facility.

1.3 Hydrogeology

The uppermost hydrogeology at the CPR facility is composed of two general units: a non-carbonate sediment overburden and an underlying unlithified carbonate sediment. Borehole information from the CPR facility shows that the overburden thickness varies from about 10 ft at the southern perimeter of the facility to about 90 ft at the northern perimeter.

The overburden consists predominantly of silt and clay with some fine sand. The fine sand is present within the clayey silt matrix, and as thin layers, seams, and lenses. The uppermost water-bearing zone (identified in this report as Zone A) is contained within the clayey-sediment overburden and has relatively low water-transmitting capacity. The material beneath the overburden consists of unlithified carbonate sediments (identified in this report as Zone B).

As part of the semiannual groundwater sampling program, groundwater samples are collected and analyzed from both water-bearing zones (Zones A and B).

The above description of the site-specific hydrogeology is summarized from detailed description presented in the geologic evaluation report for the facility (RCRA Facility Investigation, Dye Tracer Testing Program: Geological Evaluation, prepared by Anderson-Mulholland & Associates, Inc., October 2001). The geologic evaluation report included the results of three deep test borings performed within the facility area.

1.4 Groundwater Elevation and Flow Direction

Groundwater levels and flow direction in the clayey-sediment overburden (Zone A) and in the unlithified carbonate sediment water-bearing zone (Zone B) are illustrated in **Figures 4 and 5**, respectively. The sixteen wells that are included in the underground recovery system

sampling program are prominently labeled on the figures. The groundwater elevation maps were constructed as part of the work for the underground recovery system data summary reports that submitted to EPA under separate cover on a quarterly basis. Data used to construct the groundwater elevation maps are included in these quarterly reports along with maps showing individual well identifications.

The general horizontal groundwater flow direction in the uppermost clayey-sediment water-bearing zone (Zone A) illustrated in **Figure 4** is generally to the north, although groundwater mounds and depressions that occur in the central portion of the facility indicate localized deviations.

The groundwater flow direction in the unlithified carbonate sediment zone (Zone B) illustrated in **Figure 5** generally ranges from the north to the northeast. A groundwater depression occurs in the central portion of the facility, possibly related to the pumping of groundwater from the underground recovery system. An easterly flow component also occurs in the northern portion of the facility. The groundwater flow direction at the CPR facility generally conforms to the regional flow direction, which is to the north toward the Atlantic Ocean (U.S. Geological Survey, Atlas of Ground-Water Resources in Puerto Rico and the U.S. Virgin Islands, Water-Resource Investigations Report 94-4198).

The extent of the FPH plume at the CPR facility, which is illustrated in **Figure 6**, has been fairly stable over time. As part of the ongoing work for the underground recovery system, 22 recovery wells, situated within the plume, are equipped with automatic FPH recovery pumps. FPH is also pumped on a weekly basis at 28 supplemental recovery wells and on a monthly basis at 10 supplemental recovery wells using a bailer. On a monthly basis, groundwater level and FPH thickness data are collected from all the underground recovery system wells to evaluate the hydrogeologic conditions and FPH recovery characteristics. Quarterly reports summarizing the monitoring data are submitted to EPA and the Puerto Rico Environmental Quality Board (PREQB).

1.5 Previous Groundwater Sampling Work

Semiannual groundwater sampling for benzene, toluene, ethylbenzene, and xylene (BTEX), and dissolved lead has been performed since June 1989. Eight wells (MW-14B, MW-18D, MW-

MW-21B, MW-75B, MW-76B, MW-77B, and MW-78B) were monitored from June 1989 to April 1991; the current group of sixteen wells have been monitored from September 1991 to present, although as discussed above four replacement wells (MW-13B2, MW-15B2, MW-16B2, and MW-76B2) are being monitored as of March 2004 and one replacement well, MW-14A2, is being monitored as of March 2006. BTEX compounds were selected for analysis because they represent the more mobile groundwater constituents of dissolved hydrocarbons and complement the existing groundwater historical data base. Dissolved lead was selected because prior of the refinery produced leaded gasoline. Historical BTEX and lead results are presented in **Section 3**.

In March and September 1996, samples from the sixteen wells were analyzed for Target Compound List (TCL) VOCs/BNAs and Target Analyte List (TAL) metals according to the Consent Order. In view of the sampling results, EPA in a letter dated March 12, 1997 agreed to a revised list of sampling parameters consisting of VOCs and dissolved lead at all sixteen wells and dissolved mercury at wells MW-21B and MW-78B.

Replacement wells MW-13B2, MW-15B2, MW-16B2, and MW-76B2 were sampled for TCL VOCs/BNAs, and Modified Skinner List metals in May-July and October 2003 as part of the Sitewide Groundwater Monitoring Program.

2.0 Work Performed

Groundwater samples were collected from ten monitoring wells in the CPR underground recovery system. Samples were collected and analyzed for VOCs from wells MW-14B, MW-16B2, MW-18D, MW-20B, MW-21B, MW-37A, MW-75B, MW-76B2, and MW-77B, and MW-78B, and with the exception of MW-78B, these wells were also sampled for dissolved lead analysis. Due to high turbidity in the sample from well MW-78B (likely due to malfunction of the field filter), it was not analyzed for dissolved metals. The sample from well MW-21B was analyzed for dissolved mercury. The samples from wells MW-20B, MW-21B, MW-75B, MW-76B2, and MW-77B were analyzed for dissolved arsenic. The semiannual groundwater sampling schedule is summarized in **Table 1**.

The samples were analyzed for VOCs using SW-846 Method 8260B. Samples for arsenic and lead were analyzed using SW-846 Method 6010B and for mercury using SW-846 Method 7470A. Accutest Laboratories Inc., of Dayton, New Jersey, analyzed the samples. The groundwater sampling work was performed according to the field and quality assurance/quality control (QA/QC) procedures set forth in the Field Sampling Plan and the Quality Assurance Project Plan (QAPP) for the groundwater monitoring program. The sampling work was performed during September 22-24, 2009.

The general groundwater sampling protocol at each well was as follows. The well was inspected, the groundwater and well depths were noted, and the casing water volume was computed. Where possible, at least three casing volumes were purged from the well prior to sampling. A centrifugal pump and/or Waterra inertial pump with dedicated polyethylene hose were used for well purging. Consistent with previous sampling events, a Waterra inertial pump with dedicated polyethylene tubing was used for groundwater sampling. The pump intake was located within or slightly above the screened section of the well. Sampling was performed within two to three hours of purging or after a well had recovered to 80% of its initial volume. VOC samples were collected first followed by the metal samples. VOC samples were preserved with HCl and metal samples were preserved with nitric acid to a pH of less than 2. Samples for metals were field filtered prior to preservation using dedicated disposable 0.45 micron filters. The samples were preserved on ice for shipping to the laboratory.

The groundwater sampling procedure included recording field measurements of the purge water for pH, temperature, turbidity, and specific conductivity. The field measurements were made at the commencement of purging, during purging, and at the completion of purging. The field parameters were evaluated for stability prior to sampling. Groundwater sampling field data sheets showing the purge data are included in **Appendix A**.

Well purging and sampling statistics, including initial groundwater levels prior to purging, are presented in **Table 2**. Specific conductivity, pH, temperature and turbidity field measurements are presented in **Table 3**. The specific conductivity, pH, temperature, and turbidity values presented in the table were those measured at the completion of purging, which are believed to be the most representative of groundwater conditions.

Field quality control samples consisted of a trip blank and a duplicate. An equipment blank was not taken since dedicated sampling tubing and disposable field filters were used. Laboratory data were validated and certified by a Puerto Rico licensed chemist as discussed in **Section 3.**

3.0 Discussion and Evaluation of Results

A discussion and evaluation of the analytical results of the semiannual groundwater sampling at the CPR underground recovery system are presented in this section. Groundwater data were compared to groundwater screening levels. Screening levels include EPA Maximum Contaminant Levels (MCLs) and, where MCLs are not available, EPA Region 3 tap water RBSLs (EPA Region 3, Oct. 2007). For lead, the EPA action level of 15 ug/L was used as a groundwater screening level.

Summaries of VOC and dissolved metal groundwater sampling results are presented in **Tables 4 and 5**, respectively. **Table 6** presents a historical summary of groundwater sampling results for BTEX, which are common volatile constituents of petroleum hydrocarbons, and dissolved lead from initial sampling in June 1989 to present.

3.1 Volatile Organic Compounds

No VOCs were detected above screening levels at any of the wells sampled with the exception of trichloroethene (TCE) at well MW-75B. TCE is not a petroleum-related VOC and its presence is not attributed to site activities.

BTEX was detected at well MW-14B (located in the central part of the facility, downgradient of the FPH plume), but at concentrations below screening levels. At well MW-16B2 (located in the central part of the facility downgradient of the FPH plume), 1,2 dichloropropane was detected, but at a concentration below its screening level. **Table 6**, which presents historical BTEX data, shows that the detection of BTEX constituents at well MW-14B is consistent with historical results and that the concentrations generally appear to be stable. The BTEX source is attributed to dissolution of the FPH plume with subsequent downgradient transport. The combined effects of dilution, dispersion, adsorption, volatilization, and biodegradation appear to reduce the concentration of any dissolved hydrocarbons downgradient of the plume and prevent off-site migration.
TCE was detected above its MCL of 5 ug/L at well MW-75B (40.2 ug/L in primary and 40.7 in duplicate). TCE has been detected at MW-75B since initial sampling in March 1996 within a

concentration range of 41.5 J to 106 ug/L. The current result is slightly below the historical Tetrachloroethene (PCE), vinyl chloride and cis- and trans-1,2-dichloroethene (DCE) were also detected at well MW-75B, but below screening levels. The source of the chlorinated (TCE, PCE, vinyl chloride, and DCE) is attributed to Ft. Buchanan, which is upgradient of the CPR facility. Ft. Buchanan is presently investigating the TCE plume originating from its

3.2 Dissolved Metals

Dissolved metals were not detected in any of the wells sampled during this event. Analytical results for dissolved arsenic, lead, and mercury are presented in **Table 5**. (As discussed in **Section 2**, well MW-78B was not analyzed for dissolved metals due to high turbidity in the sample).

3.3 Data Quality

All data from the September 2009 sampling event were validated using EPA Region 2 SOPs, EPA National Functional Guidelines, and EPA SW-846 Test Methods, and Puerto Rico certified by Dr. Rafael Infante, a chemist licensed to practice the profession in Puerto Rico (License #1888).
All data were found to be useable; some results were qualified as estimated. The data validation/certification report is provided under separate cover as an electronic deliverable on CD-ROM (in PDF format), which also includes an electronic version of this report. The full laboratory data package is also included on the CD-ROM. (The CD-ROM is available upon request, if not already provided with this report).

3.4 Ongoing Work

Groundwater sampling will continue on a semiannual basis. The next sampling event is scheduled for March 2010.

Tables

TABLE 1
Groundwater Sampling Schedule
Underground Recovery System
Caribbean Petroleum Refining LP

Well No.	March Semiannual	Laboratory Analyses			September Semiannual	Laboratory Analyses			Rationale for Selection
		VOCs, Pb	As	Hg		VOCs, Pb	As	Hg	
Zone A									
MW-14A2	X	X	--	--	--	--	--	--	Downgradient of the FPH plume
MW-15A	X	X	--	--	--	--	--	--	Downgradient of the FPH plume
MW-16A	X	X	--	--	--	--	--	--	Generally downgradient of the FPH plume
MW-37A	X	X	--	--	X	X	--	--	Downgradient of the FPH plume
MW-63A	X	X	--	--	--	--	--	--	Downgradient of the FPH plume
Zone B									
MW-13B2	X	X	--	--	--	--	--	--	Downgradient of the FPH plume
MW-14B	X	X	--	--	X	X	--	--	Downgradient of the FPH plume
MW-15B2	X	X	--	--	--	--	--	--	Downgradient of the FPH plume
MW-16B2	X	X	--	--	X	X	--	--	Generally downgradient of the FPH plume
MW-18D	X	X	--	--	X	X	--	--	Upgradient of the FPH plume
MW-20B	X	X	X	--	X	X	X	--	Northern facility boundary and downgradient
MW-21B	X	X	X	X	X	X	X	X	Northern facility boundary and downgradient
MW-75B	X	X	X	--	X	X	X	--	Northeastern facility boundary and generally downgradient
MW-76B2	X	X	X	--	X	X	X	--	Northwestern facility boundary and generally downgradient
MW-77B	X	X	X	--	X	X	X	--	Northern facility boundary and downgradient
MW-78B	X	X	X	X	X	X	X	X	Northern facility boundary and downgradient
Total wells	16	16	6	2	10	10	6	2	

Notes: 'X' indicates analysis performed. '--' indicates no analysis.
VOC analyses are for the Target Compound List
Wells with an 'A' suffix are completed in Zone A (overburden water-bearing zone)
Wells with a 'B' or 'D' suffix are completed in Zone B (carbonate sediment water-bearing zone)

TABLE 2
Well Purging and Sampling Statistics
Underground Recovery System, September 2009
Caribbean Petroleum Refining LP

Well Number	Date of Purging & Sampling	Total Depth (ft)	Ref. Elev. (ft amsl)	D/W before Purging (ft)	Water Level (ft amsl)	Time at end of Purging	Estimated Vol. of Purged Water (gal.)	Depth to Water after Purging (ft)	Depth to Water before Sampling	Time of Sampling
37A	29-Sep	27.20	17.50	3.93	13.57	16:21	7.5	25.04	5.23	18:15
14B	24-Sep	39.60	16.31	11.02	5.29	10:13	16	11.02	9.59	10:26
16B2	24-Sep	53.25	10.98	7.61	3.37	14:20	25	7.62	7.62	14:29
18D	24-Sep	41.21	31.78	10.84	20.94	12:52	16	17.36	13.91	12:32
20B	22-Sep	84.00	9.13	3.98	5.15	12:00	45	4.02	4.01	12:14
21B	23-Sep	52.80	6.25	1.46	4.79	9:37	25	1.42	1.40	9:52
75B	23-Sep	56.00	6.27	1.10	5.17	12:19	30	1.12	1.10	13:19
76B2	23-Sep	58.00	12.98	1.80	11.18	18:23	30	7.83	7.80	18:34
77B	22-Sep	110.00	12.88	7.61	7.61	10:17	55	15.56	8.02	10:29
78B	22-Sep	85.30	8.40	3.32	5.08	13:48	45	14.72	3.34	14:12

Notes:
1. The measuring reference elevation for all wells was the top of the PVC casing.
2. Wells were purged with a centrifugal pump through dedicated polyethylene hose and sampled using the same hose. Only Well MW-75B was purged with a bladder pump through dedicated teflon lined polyethylene hose using low-flow inertial pumping and sampled through the same hose.
3. All wells had 2-inch diameter PVC casing and screen, except for well 63A which had 4 inch. Wells were screened at the bottom 10 ft.
4. Abbreviations: D/W = depth to water; amsl = above mean sea level; "--" = not available

TABLE 3
Field Measurements at Monitoring Wells
Underground Recovery System, September 2009
Caribbean Petroleum Refining LP

Well No.	pH	T (Celsius)	SC (µS/cm)	Turbidity (NTU)	PID (ppm)
37A	--	28.25	6.01	97.9	- -
14B	--	30.12	681	0.0	- -
16B2	--	29.22	656	0.0	- -
18D	--	26.7	709	0.5	- -
20B	--	27.32	1247	0.00	- -
21B	--	27.39	842	3.8	- -
75B	--	27.9	692	0.0	- -
76B2	--	26.65	692	0.0	- -
77B	--	26.35	541	70.0	- -
78B	--	27.6	3060	2000.0	- -

Abbreviations:
T = temperature
SC = specific conductivity
PID = photoionization detector reading above background

Notes:
-Accurate pH values could not be obtained due to malfunction of water quality meter during calibration.
-Temperature and SC readings shown were taken at completion of purging.

TABLE 4
Volatile Organic Compound Concentrations in Groundwater
Underground Recovery System, September 2009
Caribbean Petroleum Refining LP

Sample ID Sample Date	MCL or RBSL[1]	MW-14B 24-Sep-09	MW-16B2 24-Sep-09	MW-18D 24-Sep-09	MW-20B 22-Sep-09	MW-21B 23-Sep-09	MW-37A 23-Sep-09	MW-75B 23-Sep-09	MW-75B(dup) 23-Sep-09	MW-76B2 23-Sep-09	MW-77B 22-Sep-09	MW-78B 22-Sep-09
Analyte, reporting units are in ug/l												
Acetone	*5,500*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	**5**	0.50 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	**80**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	**80**	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
Bromomethane	*8.5*	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2-Butanone (MEK)	*7,000*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	*1,000*	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Carbon tetrachloride	**5**	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Chlorobenzene	**100**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	*3.6*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	**80**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	*190*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	**80**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	*900*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	**5**	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
1,1-Dichloroethene	**7**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	**70**	1 U	1 U	1 U	1 U	1 U	1 U	9.5	9.6	1 U	1 U	1 U
trans-1,2-Dichloroethene	**100**	1 U	1 U	1 U	1 U	1 U	1 U	1.1	1.2	1 U	1 U	1 U
1,2-Dichloropropane	**5**	1 U	0.65 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	*0.44*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	*0.44*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	**700**	0.78 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylene chloride	**5**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
4-Methyl-2-Pentanone (MIBK)	*6,300*	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	**100**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	*0.053*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	**5**	1 U	1 U	1 U	1 U	1 U	1 U	0.32 J	1 U	1 U	1 U	1 U
Toluene	**1,000**	0.38 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	**200**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	**5**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	**5**	1 U	1 U	1 U	1 U	1 U	1 U	**40.2**	**40.7**	1 U	1 U	1 U
Vinyl chloride	**2**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.70 J	1 U	1 U	1 U
Xylene (total)	**10,000**	3.0	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Any results that exceed MCLs or RBSLs are shown bolded and shaded.

U - compound was analyzed for, but not detected at the concentration shown
NA - not available
J - estimated value based on data validation
UJ - compound was analyzed for, but not detected at the concentration shown. The reporting limit is estimated.
Analyte concentrations in micrograms per liter, ug/l (or parts per billion [ppb])
Note 1: EPA Maximum Contaminant Levels (MCLs) are shown in bold. For compounds without MCLs, EPA Region 3 risk-based screening levels (RBSLs) for tap water (October 2007) are shown in italics.

TABLE 5
Dissolved Metal Concentrations in Groundwater
Underground Recovery System, September 2009
Caribbean Petroleum Refining LP

Well Number	EPA	MW-14B	MW-16B2	MW-18D	MW-20B	MW-21B
Sample Date	MCLs	24-Sep-09	24-Sep-09	24-Sep-09	22-Sep-09	23-Sep-09
Arsenic	10	NA	NA	NA	2.4 U	2.4 U
Lead	15*	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Mercury	2	NA	NA	NA	NA	0.082 U

Well Number	EPA	MW-37A	MW-75B	MW-76B2	MW-77B	MW-78B
Sample Date	MCLs	23-Sep-09	23-Sep-09	23-Sep-09	22-Sep-09	22-Sep-09
Arsenic	10	NA	2.4 U	2.4 U	2.4 U	NA
Lead	15*	1.7 U	1.7 U	1.7 U	1.7 U	NA
Mercury	2	NA	NA	NA	NA	NA

Analyte concentrations in micrograms per liter, ug/l (or parts per billion [ppb])

U - compound was analyzed for but not detected at the listed concentration
J - estimated concentration
* - EPA drinking water action level
NA - compound was not analyzed

TABLE 6
Historical BTEX and Dissolved Lead Concentrations in Groundwater
Underground Recovery System, September 2009
Caribbean Petroleum Refining LP

ANALYTES	SAMPLE DATE	Well Number																			
		MW-13B	MW-13B2	MW-14A(2)	MW-14B	MW-15A	MW-15B	MW-15B2	MW-16A	MW-16B	MW-16B2	MW-18D	MW-20B	MW-21B	MW-37A	MW-63A	MW-75B	MW-76B	MW-76B2	MW-77B	MW-78B
Benzene (ug/l)	Jun-89	- - -	- - -	- - -	75	- - -	- - -	- - -	- - -	- - -	- - -	BDL	BDL	BDL	- -	- -	20	BDL	- - -	4	BDL
	Jul-89	- - -	- - -	- - -	147	- - -	- - -	- - -	- - -	- - -	- - -	BDL	BDL	BDL	- -	- -	BDL	BDL	- - -	BDL	BDL
	Oct-89	- - -	- - -	- - -	10	- - -	- - -	- - -	- - -	- - -	- - -	BDL	BDL	BDL	- -	- -	31	BDL	- - -	BDL	BDL
	Oct-90	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	Apr-91	- - -	- - -	- - -	16	- - -	- - -	- - -	- - -	- - -	- - -	BDL	BDL	BDL	- - -	- - -	1	BDL	- - -	BDL	BDL
	Sep-92	156.6	- - -	1.5	352.3	BDL	BDL	- - -	3.7	0.9	- - -	BDL	BDL	BDL	507.2	0.7	BDL	BDL	- - -	BDL	BDL
	Apr-93	451.2	- - -	BDL	190.2	BDL	BDL	- - -	BDL	BDL	- - -	BDL	BDL	BDL	BDL	BDL	BDL	BDL	- - -	BDL	BDL
	Oct-93	15.3	- - -	BDL	24.2	BDL	BDL	- - -	BDL	BDL	- - -	BDL	BDL	BDL	BDL	BDL	BDL	BDL	- - -	BDL	BDL
	Apr-94	BDL	- - -	BDL	78.6	BDL	BDL	- - -	BDL	11.2	- - -	BDL	BDL	BDL	8620	0.55 J	BDL	BDL	- - -	BDL	BDL
	Oct-94	BDL	- - -	BDL	11.7	BDL	BDL	- - -	BDL	15.8	- - -	BDL	BDL	BDL	4990	BDL	BDL	BDL	- - -	BDL	BDL
	Mar-95	BDL	- - -	BDL	BDL	BDL	BDL	- - -	BDL	11.8	- - -	BDL	BDL	BDL	78.3	BDL	BDL	BDL	- - -	BDL	BDL
	Oct-95	BDL	- - -	BDL	358	BDL	BDL	- - -	BDL	BDL	- - -	1.04	BDL	BDL	83.9	BDL	BDL	BDL	- - -	BDL	BDL
	Mar-96	10 U	- - -	10 U	320 E	10 U	10 U	- - -	10 U	10 U	- - -	10 U	10 U	2 J	19 J	10 U	10 U	10 U	- - -	10 U	10 U
	Sep-96	10 U	- - -	10 U	160	10 U	10 U	- - -	10 U	10 U	- - -	10 U	10 U	10 U	15 J	10 U	10 U	10 U	- - -	10 U	10 U
	Mar-97	10 U	- - -	9 J	60	10 U	10 U	- - -	10 U	10 U	- - -	10 U	10 U	10 U	50 U	10 U	10 U	10 U	- - -	10 U	10 U
	Sep-97	10 U	- - -	10 U	35	10 U	10 U	- - -	10 U	10 U	- - -	10 U	10 U	10 U	50 U	10 U	10 U	10 U	- - -	10 U	10 U
	Mar-98	10 U	- - -	10 U	21	10 U	10 U	- - -	10 U	10 U	- - -	10 U	10 U	10 U	2 J	10 U	10 U	10 U	- - -	10 U	10 U
	Sep-98	10 U	- - -	10 U	19	10 U	10 U	- - -	10 U	10 U	- - -	10 U	10 U	10 U	6 J	10 U	10 U	10 U	- - -	10 U	10 U
	Mar-99	10 U	- - -	22	15	10 U	10 U	- - -	10 U	10 U	- - -	10 U	10 U	10 U	20 U	10 U	10 U	10 U	- - -	10 U	10 U
	Sep-99	- - -	- - -	- - -	2 J	- - -	- - -	- - -	--	10 U	- - -	10 U	10 U	10 U	15	- - -	10 U	10 U	- - -	10 U	10 U
	Mar-00	5 J	- - -	6 J	1 J	10 U	10 U	- - -	10 U	10 U	- - -	10 U	10 U	10 U	6 J	10 U	10 U	10 U	- - -	10 U	10 U
	Sep-00	- - -	- - -	- - -	8 J	- - -	- - -	- - -	- - -	10 U	- - -	10 U	10 U	10 U	2 J	- - -	10 U	10 U	- - -	10 U	10 U
	Mar-01	10 U	- - -	10 U	3 J	10 U	10 U	- - -	10 U	10 U	- - -	10 U	10 U	10 U	10 U	10 U	10 U	10 U	- - -	10 U	10 U
	Sep-01	- - -	- - -	- - -	1 U	- - -	- - -	- - -	- - -	1 U	- - -	1 U	1 U	1 U	1 U	- - -	1 U	1 U	- - -	1 U	1 U
	Mar-02	1 U	- - -	1 U	1.6	1 U	1 U	- - -	1 U	1 U	- - -	1 U	1 U	1 U	1 U	1 U	1 U	1 U	- - -	1 U	1 U
	Sep-02	- - -	- - -	- - -	1 U	- - -	- - -	- - -	- - -	1 U	- - -	1 U	1 U	1 U	0.52 J	- - -	1 U	1 U	- - -	1 U	1 U
	Mar-03	- - -	- - -	1 U	1 U	- - -	- - -	- - -	- - -	- - -	- - -	1 U	- - -	- - -	1 U	1 U	- - -	1 U	- - -	1 U	- - -
	Sep-03	- - -	- - -	- - -	1.2	- - -	- - -	- - -	- - -	- - -	- - -	1 U	- - -	- - -	1 U	- - -	- - -	- - -	- - -	1 U	- - -
	Mar-04	- - -	1 U	1.1	0.40 J	1 U	- - -	1 U	1 U	- - -	1 U	1 U	1 U	1 U	1 U	1 U	1 U	- - -	1 U	1 U	1 U
	Sep-04	- - -	- - -	- - -	1 U	- - -	- - -	- - -	- - -	- - -	1 U	1 U	1 U	1 U	1 U	- - -	1 U	- - -	1 U	1 U	1 U
	Feb-05	- - -	1 U	- - -	0.43 J	1 U	- - -	1 U	1 U	- - -	1 U	1 U	1 U	1 U	1 U	1 U	1 U	- - -	1 U	1 U	1 U
	Sep-05	- - -	- - -	- - -	7.7	- - -	- - -	- - -	- - -	- - -	1 U	1 U	1 U	1 U	1 U	- - -	1 U	- - -	1 U	1 U	1 U
	Mar-06	- - -	1 U	1 U	1 U	1 U	- - -	1 U	1 U	- - -	1 U	1 U	1 U	1 U	1 U	1 U	1 U	- - -	1 U	1 U	1 U
	Sep-06	- - -	- - -	- - -	1 U	- - -	- - -	- - -	- - -	- - -	1 U	1 U	1 U	1 U	1 U	- - -	1 U	- - -	1 U	1 U	1 U
	Mar-07	- - -	1 U	1 U	1 U	1 U	- - -	1 U	1 U	- - -	1 U	1 U	1 U	1 U	1 U	1 U	1 U	- - -	1 U	- - -	1 U
	Sep-07	- - -	- - -	- - -	1 U	- - -	- - -	- - -	- - -	- - -	1 U	1 U	1 U	1 U	1 U	- - -	1 U	- - -	1 U	1 U	1 U
	Mar-08	- - -	1 U	1 U	1 U	1 U	- - -	1 U	1 U	- - -	1 U	1 U	1 U	1 U	1 U	1 U	1 U	- - -	1 U	1 U	1 U
	Sep-08	- - -	- - -	- - -	1 U	- - -	- - -	- - -	- - -	- - -	1 U	1 U	1 U	1 U	1 U	- - -	1 U	- - -	1 U	1 U	1 U
	Mar-09	- - -	1 U	1 U	1 U	1 U	- - -	1 U	1 U	- - -	1 U	1 U	1 U	1 U	1 U	1 U	1 U	- - -	1 U	1 U	1 U
	Sep-09	- - -	- - -	- - -	0.50 J	- - -	- - -	- - -	- - -	- - -	1 U	1 U	1 U	1 U	1 U	- - -	1 U	- - -	1 U	1 U	1 U

TABLE 6
Historical BTEX and Dissolved Lead Concentrations in Groundwater
Underground Recovery System, September 2009
Caribbean Petroleum Refining LP

ANALYTES	SAMPLE DATE	Well Number																			
		MW-13B	MW-13B2	MW-14A(2)	MW-14B	MW-15A	MW-15B	MW-15B2	MW-16A	MW-16B	MW-16B2	MW-18D	MW-20B	MW-21B	MW-37A	MW-63A	MW-75B	MW-76B	MW-76B2	MW-77B	MW-78B
Toluene (ug/l)	Jun-89	---	---	---	27	---	---	---	---	---	---	BDL	BDL	BDL	---	---	13	31	---	39	BDL
	Jul-89	---	---	---	56	---	---	---	---	---	---	BDL	BDL	BDL	---	---	BDL	BDL	---	BDL	BDL
	Oct-89	---	---	---	BDL	---	---	---	---	---	---	BDL	BDL	BDL	---	---	BDL	BDL	---	BDL	BDL
	Oct-90	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	Apr-91	---	---	---	2	---	---	---	---	---	---	BDL	BDL	BDL	---	---	BDL	BDL	---	BDL	BDL
	Sep-92	BDL	---	BDL	5.4	BDL	BDL	---	1.9	0.7	---	0.5	BDL	BDL	52.4	0.7	BDL	BDL	---	BDL	BDL
	Apr-93	BDL	---	BDL	16.3	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	BDL	BDL	BDL	BDL	---	BDL	BDL
	Oct-93	BDL	---	BDL	BDL	BDL	BDL	---	2.05	BDL	---	BDL	BDL	BDL	BDL	BDL	BDL	BDL	---	BDL	BDL
	Apr-94	BDL	---	2.46	6.27	BDL	BDL	---	13.6	1.61	---	BDL	BDL	BDL	30000	0.81J	BDL	BDL	---	BDL	BDL
	Oct-94	BDL	---	BDL	BDL	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	9140	3.66	BDL	BDL	---	BDL	BDL
	Mar-95	BDL	---	BDL	1.28	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	10200	BDL	BDL	BDL	---	BDL	BDL
	Oct-95	BDL	---	BDL	43.6	BDL	BDL	---	BDL	BDL	---	1.5	BDL	BDL	349	BDL	BDL	BDL	---	BDL	BDL
	Mar-96	10 U	---	3 J	11 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	17 J	10 U	10 U	10 U	---	10 U	10 U
	Sep-96	10 U	---	10 U	9 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	1 J	16 J	10 U	10 U	10 U	---	10 U	10 U
	Mar-97	10 U	---	10 U	7 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	---	10 U	10 U
	Sep-97	10 U	---	20 U	6 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	50 U	10 U	10 U	10 U	---	1 J	10 U
	Mar-98	10 U	---	10 U	3 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	0.9 J	10 U	10 U	10 U	---	10 U	10 U
	Sep-98	10 U	---	10 U	4 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	2 J	10 U	10 U	10 U	---	10 U	10 U
	Mar-99	10 U	---	20 U	3 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	20 U	10 U	10 U	10 U	---	10 U	10 U
	Sep-99	---	---	---	2J	---	---	---	---	10 U	---	10 U	10 U	10 U	10 U	---	2 J	10 U	---	10 U	10 U
	Mar-00	10 U	---	10 U	10 U	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	---	10 U	10 U
	Sep-00	---	---	---	10 U	---	---	---	---	10 U	---	10 U	10 U	10 U	1J	---	10 U	10 U	---	10 U	10 U
	Mar-01	10 U	---	10 U	1 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	---	10 U	10 U
	Sep-01	---	---	---	1.4	---	---	---	---	1 U	---	1 U	1 U	1 U	1 U	---	1 U	1 U	---	1 U	1 U
	Mar-02	1 U	---	1 U	0.97 J	1 U	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U	1.2	1 U	---	1 U	1 U
	Sep-02	---	---	---	0.91 J	---	---	---	---	1 U	---	1 U	1 U	1 U	1 U	---	1 U	1 U	---	1 U	1 U
	Mar-03	---	---	1 U	1.3	---	---	---	---	---	---	1 U	---	---	1 U	1 U	---	1 U	---	1 U	---
	Sep-03	---	---	---	1.0	---	---	---	---	---	---	1 U	---	---	0.44 J	---	---	---	---	1 U	---
	Mar-04	---	1 U	1 U	1.3	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U
	Sep-04	---	---	---	1.7	---	---	---	---	---	1 U	1 U	1 U	1 U	0.46 J	---	1 U	---	1 U	1 U	1 U
	Feb-05	---	1 U	---	1.3	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U
	Sep-05	---	---	---	0.88 J	---	---	---	---	---	1 U	1 U	1 U	1 U	1 U	---	1 U	---	1 U	1 U	1 U
	Mar-06	---	1 U	1 U	0.89 J	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U
	Sep-06	---	---	---	0.47 J	---	---	---	---	---	1 U	1 U	1 U	1 U	1 U	---	1 U	---	1 U	1 U	1 U
	Mar-07	---	1 U	1 U	1 U	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	---	1 U
	Sep-07	---	---	---	1 U	---	---	---	---	---	1 U	1 U	1 U	1 U	1 U	---	1 U	---	1 U	1 U	1 U
	Mar-08	---	1 U	1 U	1 U	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U
	Sep-08	---	---	---	1 U	---	---	---	---	---	1 U	1 U	1 U	1 U	1 U	---	1 U	---	1 U	1 U	1 U
	Mar-09	---	1 U	1 U	1 U	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U
	Sep-09	---	---	---	0.38 J	---	---	---	---	---	1 U	1 U	1 U	1 U	1 U	---	1 U	---	1 U	1 U	1 U

TABLE 6
Historical BTEX and Dissolved Lead Concentrations in Groundwater
Underground Recovery System, September 2009
Caribbean Petroleum Refining LP

ANALYTES	SAMPLE DATE	Well Number																			
		MW-13B	MW-13B2	MW-14A(2)	MW-14B	MW-15A	MW-15B	MW-15B2	MW-16A	MW-16B	MW-16B2	MW-18D	MW-20B	MW-21B	MW-37A	MW-63A	MW-75B	MW-76B	MW-76B2	MW-77B	MW-78B
Ethyl-benzene (ug/l)	Jun-89	---	---	---	15	---	---	---	---	---	---	BDL	BDL	BDL	---	---	BDL	BDL	---	2	BDL
	Jul-89	---	---	---	11	---	---	---	---	---	---	BDL	BDL	BDL	---	---	BDL	BDL	---	BDL	BDL
	Oct-89	---	---	---	13	---	---	---	---	---	---	BDL	BDL	BDL	---	---	BDL	BDL	---	BDL	BDL
	Oct-90	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	Apr-91	---	---	---	9	---	---	---	---	---	---	BDL	BDL	BDL	---	---	BDL	BDL	---	BDL	BDL
	Sep-92	BDL	---	BDL	7.1	BDL	BDL	---	4.1	0.6	---	0.4	BDL	BDL	514.2	0.9	BDL	BDL	---	BDL	BDL
	Apr-93	BDL	---	BDL	36	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	29	BDL	BDL	BDL	---	BDL	BDL
	Oct-93	BDL	---	BDL	7.15	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	3.45	BDL	BDL	BDL	---	BDL	BDL
	Apr-94	BDL	---	BDL	8.91	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	8980	BDL	BDL	BDL	---	BDL	BDL
	Oct-94	BDL	---	BDL	5.45	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	1660	BDL	BDL	BDL	---	BDL	BDL
	Mar-95	BDL	---	BDL	BDL	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	4510	BDL	BDL	BDL	---	BDL	BDL
	Oct-95	BDL	---	BDL	BDL	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	1560	BDL	BDL	BDL	---	BDL	BDL
	Mar-96	10 U	---	5 J	4 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	930 E	10 U	10 U	2 J	---	10 U	10 U
	Sep-96	10 U	---	10 U	4 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	570	10 U	10 U	10 U	---	10 U	10 U
	Mar-97	10 U	---	10 U	10 U	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	---	10 U	10 U
	Sep-97	10 U	---	20 U	4 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	440	10 U	10 U	10 U	---	2 J	10 U
	Mar-98	10 U	---	10 U	1 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	69	10 U	10 U	10 U	---	10 U	10 U
	Sep-98	10 U	---	10 U	2 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	170	10 U	10 U	10 U	---	10 U	10 U
	Mar-99	10 U	---	20 U	1 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	54	10 U	10 U	10 U	---	10 U	10 U
	Sep-99	---	---	---	4 J	---	---	---	---	10 U	---	10 U	10 U	10 U	28	---	10 U	10 U	---	10 U	10 U
	Mar-00	10 U	---	10 U	2 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	6 J	10 U	10 U	10 U	---	10 U	10 U
	Sep-00	---	---	---	4 J	---	---	---	---	10 U	---	10 U	10 U	10 U	27	---	10 U	10 U	---	10 U	10 U
	Mar-01	10 U	---	10 U	1 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	4 J	10 U	10 U	10 U	---	10 U	10 U
	Sep-01	---	---	---	1 U	---	---	---	---	1 U	---	1 U	1 U	1 U	3.6	---	1 U	1 U	---	1 U	1 U
	Mar-02	1 U	---	1 U	1.1	1 U	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1.6	1 U	1 U	1 U	---	1 U	1 U
	Sep-02	---	---	---	1.0	---	---	---	---	1 U	---	1 U	1 U	1 U	1.5	---	1 U	1 U	---	1 U	1 U
	Mar-03	---	---	1 U	1.3	---	---	---	---	---	---	1 U	---	---	1.1	1 U	---	1 U	---	1 U	---
	Sep-03	---	---	---	0.95 J	---	---	---	---	---	---	1 U	---	---	3.4	---	---	---	---	1 U	---
	Mar-04	---	1 U	1 U	1.1	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	1.3	1 U	1 U	---	1 U	1 U	1 U
	Sep-04	---	---	---	1.1	---	---	---	---	---	1 U	1 U	1 U	1 U	2.0	---	1 U	---	1 U	1 U	1 U
	Feb-05	---	1 U	---	1.1	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	1.7	1 U	1 U	---	1 U	1 U	1 U
	Sep-05	---	---	---	1.1	---	---	---	---	---	1 U	1 U	1 U	1 U	1 U	---	1 U	---	1 U	1 U	1 U
	Mar-06	---	1 U	1 U	1 U	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U
	Sep-06	---	---	---	0.69 J	---	---	---	---	---	1 U	1 U	1 U	1 U	1.1	---	1 U	---	1 U	1 U	1 U
	Mar-07	---	1 U	1 U	0.56 J	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	---	1 U
	Sep-07	---	---	---	0.63 J	---	---	---	---	---	1 U	1 U	1 U	1 U	1 U	---	1 U	---	1 U	1 U	1 U
	Mar-08	---	1 U	1 U	0.75 J	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U
	Sep-08	---	---	---	0.86 J	---	---	---	---	---	1 U	1 U	1 U	1 U	1 U	---	1 U	---	1 U	1 U	1 U
	Mar-09	---	1 U	1 U	1 U	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U
	Sep-09	---	---	---	0.78 J	---	---	---	---	---	1 U	1 U	1 U	1 U	1 U	---	1 U	---	1 U	1 U	1 U

TABLE 6
Historical BTEX and Dissolved Lead Concentrations in Groundwater
Underground Recovery System, September 2009
Caribbean Petroleum Refining LP
(Page 4 of 5)

ANALYTES	SAMPLE DATE	Well Number																			
		MW-13B	MW-13B2	MW-14A(2)	MW-14B	MW-15A	MW-15B	MW-15B2	MW-16A	MW-16B	MW-16B2	MW-18D	MW-20B	MW-21B	MW-37A	MW-63A	MW-75B	MW-76B	MW-76B2	MW-77B	MW-78B
Total Xylenes (ug/l)	Jun-89	---	---	---	53	---	---	---	---	---	---	BDL	BDL	BDL	---	---	8	BDL	---	24	BDL
	Jul-89	---	---	---	71	---	---	---	---	---	---	BDL	BDL	BDL	---	---	BDL	BDL	---	BDL	BDL
	Oct-89	---	---	---	BDL	---	---	---	---	---	---	BDL	BDL	BDL	---	---	BDL	BDL	---	BDL	BDL
	Oct-90	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	Apr-91	---	---	---	13	---	---	---	---	---	---	BDL	BDL	BDL	---	---	BDL	BDL	---	BDL	BDL
	Sep-92	BDL	---	11.9	22.3	BDL	BDL	---	0.7	0.3	---	1	BDL	BDL	551.8	BDL	BDL	BDL	---	BDL	1.3
	Apr-93	BDL	---	BDL	27.3	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	BDL	BDL	BDL	BDL	---	BDL	BDL
	Oct-93	BDL	---	BDL	6.72	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	BDL	BDL	BDL	BDL	---	BDL	BDL
	Apr-94	BDL	---	BDL	11.0	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	63100	2.67	BDL	BDL	---	BDL	BDL
	Oct-94	BDL	---	BDL	13.3	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	10200	BDL	BDL	BDL	---	BDL	BDL
	Mar-95	BDL	---	BDL	BDL	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	20200	BDL	BDL	BDL	---	BDL	BDL
	Oct-95	BDL	---	BDL	28.5	BDL	BDL	---	1.82	BDL	---	BDL	BDL	BDL	6700	BDL	BDL	BDL	---	BDL	BDL
	Mar-96	10 U	---	16	17 J	10 U	10 U	---	10 U	0.8 J	---	10 U	10 U	1 J	2800 E	10 U	3 J	2 J	---	10 U	10 U
	Sep-96	10 U	---	10 U	17	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	1300	10 U	10 U	10 U	---	10 U	10 U
	Mar-97	10 U	---	31	17	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	1300	10 U	10 U	10 U	---	10 U	10 U
	Sep-97	10 U	---	24	16	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	580	10 U	10 U	10 U	---	3 J	10 U
	Mar-98	10 U	---	1 J	7 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	48	10 U	10 U	10 U	---	10 U	10 U
	Sep-98	10 U	---	10 U	19	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	230	10 U	10 U	10 U	---	10 U	10 U
	Mar-99	10 U	---	42	12	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	15 J	10 U	10 U	10 U	---	10 U	10 U
	Sep-99	---	---	---	8 J	---	---	---	---	10 U	---	10 U	10 U	10 U	10 J	---	2 J	10 U	---	10 U	10 U
	Mar-00	10 U	---	10 U	3 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	1 J	10 U	10 U	10 U	---	10 U	10 U
	Sep-00	---	---	---	3 J	---	---	---	---	10 U	---	10 U	10 U	10 U	4 J	---	10 U	10 U	---	10 U	10 U
	Mar-01	10 U	---	10 U	6 J	10 U	10 U	---	10 U	10 U	---	10 U	10 U	10 U	2 J	10 U	10 U	10 U	---	10 U	10 U
	Sep-01	---	---	---	5.8	---	---	---	---	1 U	---	1 U	1 U	1 U	1 U	---	1 U	1 U	---	1 U	1 U
	Mar-02	1 U	---	1 U	6.0	1 U	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1.6	1 U	1 U	1 U	---	1 U	1 U
	Sep-02	---	---	---	5.2	---	---	---	---	1 U	---	1 U	1 U	1 U	0.73 J	---	1 U	1 U	---	1 U	1 U
	Mar-03	---	---	1 U	5.2	---	---	---	---	---	---	1 U	---	---	1.0	1 U	---	1 U	---	1 U	---
	Sep-03	---	---	---	4.9	---	---	---	---	---	---	1 U	---	---	2.1	---	---	---	---	1 U	---
	Mar-04	---	1 U	3.5	5.8	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	1.9	1 U	3.8	---	1 U	1 U	1 U
	Sep-04	---	---	---	6.7	---	---	---	---	---	1 U	1 U	1 U	1 U	2.1	---	1 U	---	1 U	1 U	1 U
	Feb-05	---	1 U	---	5.2	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	1.8	1 U	1 U	---	1 U	1 U	1 U
	Sep-05	---	---	---	4.5	---	---	---	---	---	1 U	1 U	1 U	1 U	1 U	---	1 U	---	1 U	1 U	1 U
	Mar-06	---	1 U	1 U	4.4	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	1.4	1 U	1 U	---	1 U	1 U	1 U
	Sep-06	---	---	---	3.3	---	---	---	---	---	1 U	1 U	1 U	1 U	0.50 J	---	1 U	---	1 U	1 U	1 U
	Mar-07	---	1 U	1 U	2.3	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	0.49 J	1 U	1 U	---	1 U	---	1 U
	Sep-07	---	---	---	2.6	---	---	---	---	---	1 U	1 U	1 U	1 U	0.77 J	---	1 U	---	1 U	1 U	1 U
	Mar-08	---	1 U	1 U	3.2	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U
	Sep-08	---	---	---	3.4	---	---	---	---	---	1 U	1 U	1 U	1 U	1 U	---	1 U	---	1 U	1 U	1 U
	Mar-09	---	1 U	1 U	2.0	1 U	---	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U
	Sep-09	---	---	---	3.0	---	---	---	---	---	1 U	1 U	1 U	1 U	1 U	---	1 U	---	1 U	1 U	1 U

TABLE 6
Historical BTEX and Dissolved Lead Concentrations in Groundwater
Underground Recovery System, September 2009
Caribbean Petroleum Refining LP

ANALYTES	SAMPLE DATE	Well Number																			
		MW-13B	MW-13B2	MW-14A(2)	MW-14B	MW-15A	MW-15B	MW-15B2	MW-16A	MW-16B	MW-16B2	MW-18D	MW-20B	MW-21B	MW-37A	MW-63A	MW-75B	MW-76B	MW-76B2	MW-77B	MW-78B
Lead (ug/l)	Jun-89	---	---	---	17	---	---	---	---	---	---	13	8	2	---	---	1	BDL	---	3	BDL
	Jul-89	---	---	---	30	---	---	---	---	---	---	19	4	BDL	---	---	BDL	BDL	---	2	BDL
	Oct-89	---	---	---	50	---	---	---	---	---	---	10	3	BDL	---	---	BDL	BDL	---	BDL	BDL
	Oct-90	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	Apr-91	---	---	---	BDL	---	---	---	---	---	---	BDL	BDL	2	---	---	BDL	BDL	---	2	6
	Sep-92	BDL	---	---	BDL	BDL	BDL	---	BDL	BDL	---	BDL	49B	BDL	BDL	BDL	BDL	BDL	---	46B	122B
	Apr-93	BDL	---	BDL	28	54	BDL	---	BDL	BDL	---	82	31	BDL	BDL	BDL	BDL	BDL	---	34	BDL
	Oct-93	BDL	---	BDL	BDL	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	BDL	BDL	BDL	BDL	---	BDL	BDL
	Apr-94	BDL	---	---	BDL	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	BDL	BDL	BDL	BDL	---	BDL	BDL
	Oct-94	BDL	---	---	BDL	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	BDL	BDL	BDL	BDL	---	BDL	BDL
	Mar-95	BDL	---	---	BDL	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	BDL	BDL	BDL	BDL	---	BDL	BDL
	Oct-95	BDL	---	---	BDL	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	BDL	BDL	BDL	BDL	---	BDL	BDL
	Mar-96	2.7 U	---	2.7 U	2.7 UW	2.7 U	2.7 U	---	2.7 U	2.7 U	---	2.7 B	2.7 U	2.7 UW	2.7 UW	2.7 U	5.2	2.7 U	---	2.7 U	2.7 U
	Sep-96	2.7 UNW	---	2.7 UNW	2.7 UN	2.7 UNW	2.7 UN	---	2.7 UNW	2.7 UNW	---	2.7 UNW	2.7 UNW	2.7 UN	2.7 UNW	2.7 UNW	2.7 UN	2.7 UNW	---	2.7 UNW	2.7 UN
	Mar-97	2.2 U	---	2.2 U	2.2 U	2.2 U	2.2 U	---	2.2 U	2.2 U	---	2.2 U	2.2 U	2.2 U	2.2 UW	2.2 UW	2.2 U	2.2 UW	---	2.2 U	2.2 U
	Sep-97	0.67 U	---	1 B	0.67 U	0.67 U	0.67 U	---	0.67 U	0.67 U	---	0.67 UW	0.67 UW	0.67 U	0.67 UW	0.67 U	5.9	17.8	---	0.67 U	0.67 UW
	Mar-98	2.6 UW	---	2.6 UW	2.6 UW	2.6 U	2.6 UW	---	2.6 UW	2.6 UW	---	2.6 U	2.6 U	2.6 UW	2.4 UW	2.6 UW	2.6 UW	2.6 U	---	2.6 UW	2.6 U
	Sep-98	1.9 U	---	1.9 U	1.9 UW	1.9 U	1.9 U	---	1.9 U	1.9 UW	---	1.9 U	1.9 U	1.9 UW	1.9 U	1.9 U	1.9 U	1.9 U	---	1.9 U	1.9 U
	Mar-99	1.3 U	---	1.3 U	1.3 U	4.1	1.3 U	---	1.3 U	1.3 U	---	1.3 U	1.3 U	1.3 U	1.3 U	6	1.3 U	2.2 B	---	1.3 U	1.3 U
	Sep-99	---	---	---	1.7 U	1.7 U	---	---	---	1.7 U	---	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	---	1.7 U	2.7 B
	Mar-00	1.8 U	---	1.8 U	1.8 U	1.8 U	1.8 U	---	1.8 U	1.8 U	---	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	---	1.8 U	1.8 U
	Sep-00	---	---	---	1.3 UJ	1.3 UJ	---	---	---	1.3 UJ	---	1.3 UJ	1.3 UJ	1.3 UJ	1.3 UJ	1.3 UJ	1.3 UJ	1.4 BJ	---	1.3 UJ	1.3 UJ
	Mar-01	1.0 U	---	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U	1.0 U	---	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U	1.0 U
	Sep-01	---	---	---	2.1 U	---	---	---	---	2.1 U	---	1.1 U	2.1 U	2.1 U	2.1 U	---	2.1 U	2.1 U	---	2.1 U	3.8
	Mar-02	7.1	---	2.2 U	2.2 U	2.2 U	2.2 U	---	3.0	2.2 U	---	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	---	2.2 U	2.2 U
	Sep-02	---	---	---	1.8 U	---	---	---	---	3.2	---	1.8 U	1.8 U	1.8 U	1.8 U	---	1.8 U	1.8 U	---	1.8 U	1.8 U
	Mar-03	---	---	2.5 U	2.5 U	---	---	---	---	---	---	2.5 U	---	---	2.5 U	2.5 U	---	2.5 U	---	2.5 U	---
	Sep-03	---	---	---	2.6 U	---	---	---	---	---	---	2.6 U	---	---	2.6 U	---	---	---	---	2.6 U	---
	Mar-04	---	1.7 U	1.7 U	1.7 U	1.7 U	---	1.7 U	1.7 U	---	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	---	1.7 U	1.7 U	1.7 U
	Sep-04	---	---	---	2.3 U	---	---	---	---	---	2.3 U	2.3 U	2.6 U	2.6 U	2.3 U	---	2.3 U	---	2.3 U	2.3 U	2.3 U
	Feb-05	---	1.9 U	---	1.9 U	1.9 U	---	1.9 U	1.9 U	---	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	---	1.9 U	1.9 U	1.9 U
	Sep-05	---	---	---	2.7 U	---	---	---	---	---	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	---	2.7 U	---	2.7 U	2.7 U	2.7 U
	Mar-06	---	2.6 U	2.6 U	2.6 U	2.6 U	---	2.6 U	2.6 U	---	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	---	2.6 U	2.6 U	2.6 U
	Sep-06	---	---	---	2.6 U	---	---	---	---	---	2.6 U	2.6 U	2.6 U	2.6 U	5.1	---	2.6 U	---	2.6 U	2.6 U	2.6 U
	Mar-07	---	2.8 U	3.4	3.9	3.4	---	2.8 U	2.8 U	---	2.8 U	2.8 U	4.0	2.8 U	2.8 U	4.3	4.2	---	7.6	3.3	3.3
	Sep-07	---	---	---	2.4 B	---	---	---	---	---	0.94 U	1.0 B	0.94 U	1.3 B	1.1 B	---	0.94 U	---	0.94 U	0.94 U	0.94 U
	Mar-08	---	1.4 U	2.3 B	1.4 U	3.0	---	1.9 B	2.2 B	---	2.2 B	1.4 U	2.1 BJ	2.9 BJ	20.0	1.4 U	1.4 U	---	2.5 B	3.0 J	3.4 J
	Sep-08	---	---	---	1.8 B	---	---	---	---	---	2.2 B	1.5 B	3.1	1.4 U	6.3	---	1.4 U	---	1.4 U	2.6 B	6.4
	Mar-09	---	1.7 U	1.7 U	1.7 U	1.7 U	---	1.7 U	1.7 U	---	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	---	1.7 U	1.7 U	1.7 U
	Sep-09	---	---	---	1.7 U	---	---	---	---	---	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	---	1.7 U	---	1.7 U	1.7 U	---

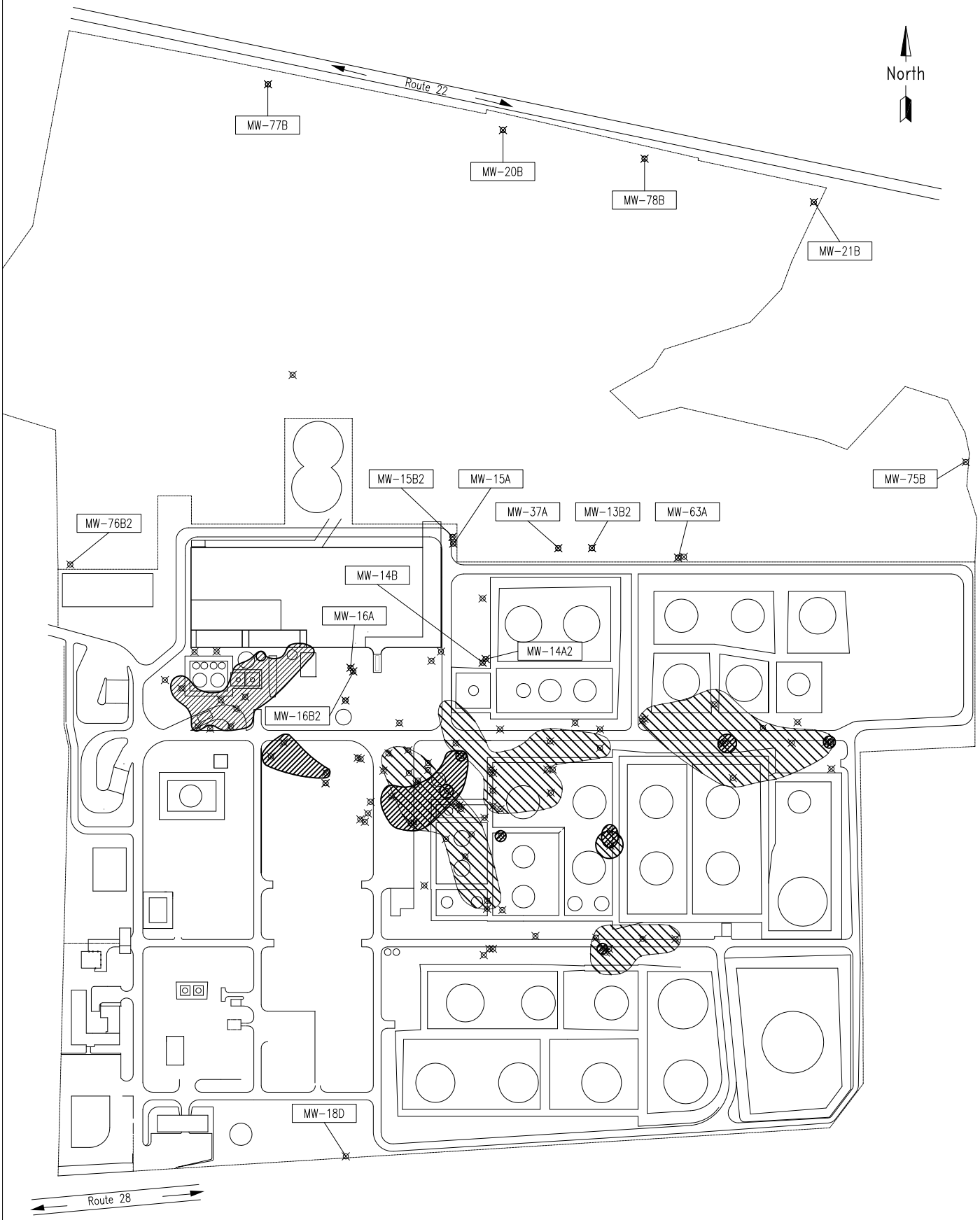
Notes:
BDL = Below detection limit
'---' = Not sampled

B = (for June 1989 to October 1995); Analyte found in trip blank; possible/probable contamination or laboratory problem indicated.
B = (after March 1996); Concentration is between the instrument detection limit (IDL) and contract required detection limit (CRDL). Detections may be the result of instrument noise and other lab artifacts, especially near the IDL.
U = Compound was analyzed for but not detected at the concentration shown.
N = Spiked sample recovery not within control limits.
E = Exceeds calibration range.
W = Post-digestion spike for furnace atomic absorption (AA) out of control limits.
J = Estimated Concentration
BJ + Estimated Concentration between the Method Detection Limit (MDL) and the Reporting Limit (RL).

Sampling Event and Sampling Company
Jun-89 through Oct-89 --- Geraghty & Miller
Oct-90 through Apr-91 --- Blasland, Bouck & Lee
Sept-92 through Present --- Anderson, Mulholland & Associates, Inc.

Analyses were performed using SW-846 methods from June 1989 through October 1995. CLP methods were used from March 1996 through March 2001.
SW-846 method 8260B was used for VOCs and CLP methods were used for metals from Sep 2001 to present.

Data validation was performed on the September 2000 sample data and on subsequent sample data.
Prior to September 2000, data qualifiers were applied directly by the laboratory.



Note: Extent of free-phase hydrocarbon plume based on September 2008 data.

SCALE (feet)

200 100 0 200

LEGEND

MW-15A Monitoring Well Location

Hydrocarbon Plume – Zone A

Hydrocarbon Plume – Zone B

Figure 6
Free-Phase Hydrocarbon Plume Area
Caribbean Petroleum Refining, LP
Bayamon, Puerto Rico

Anderson-Mulholland & Associates, Inc.
White Plains, New York

November 2008

Figures

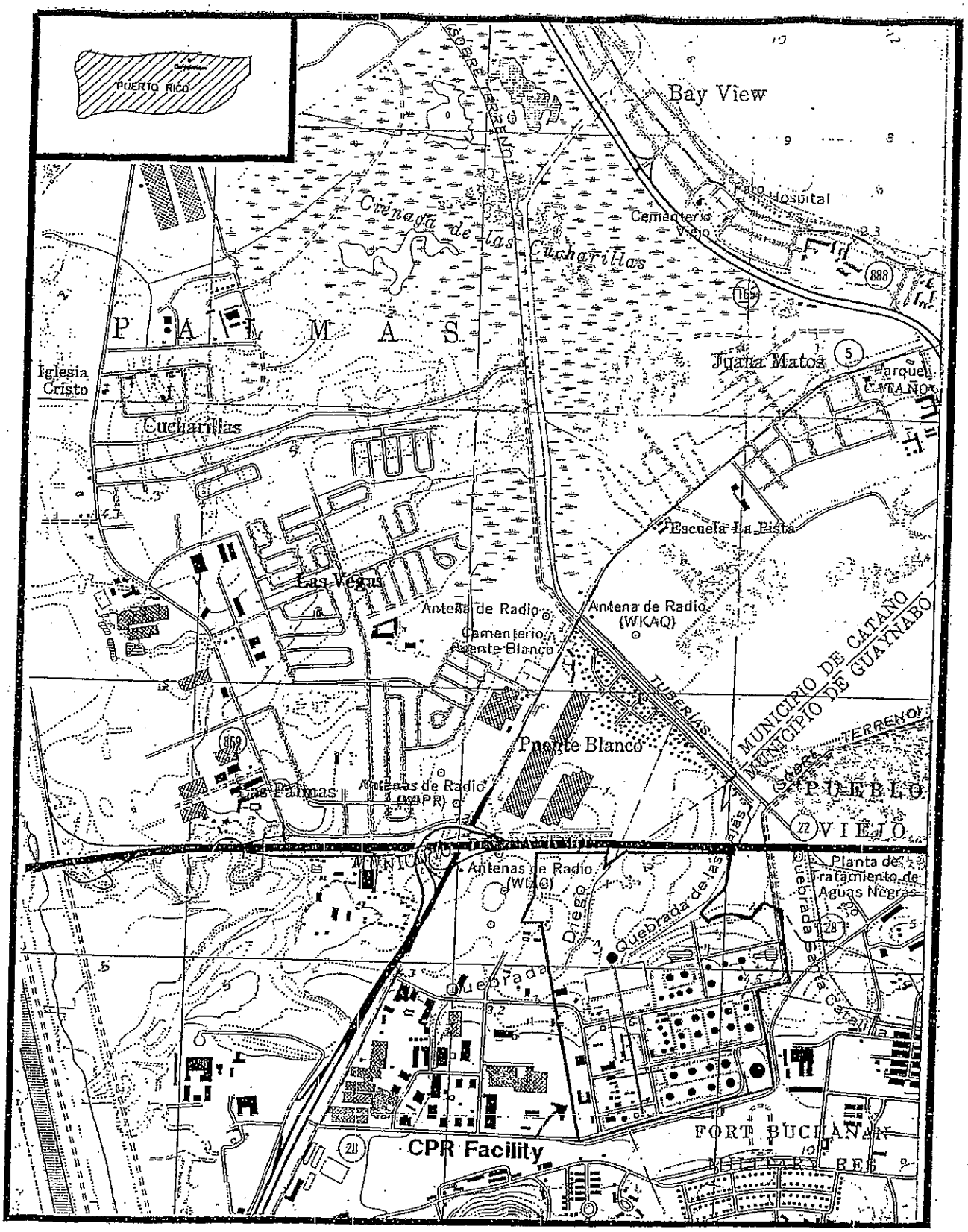
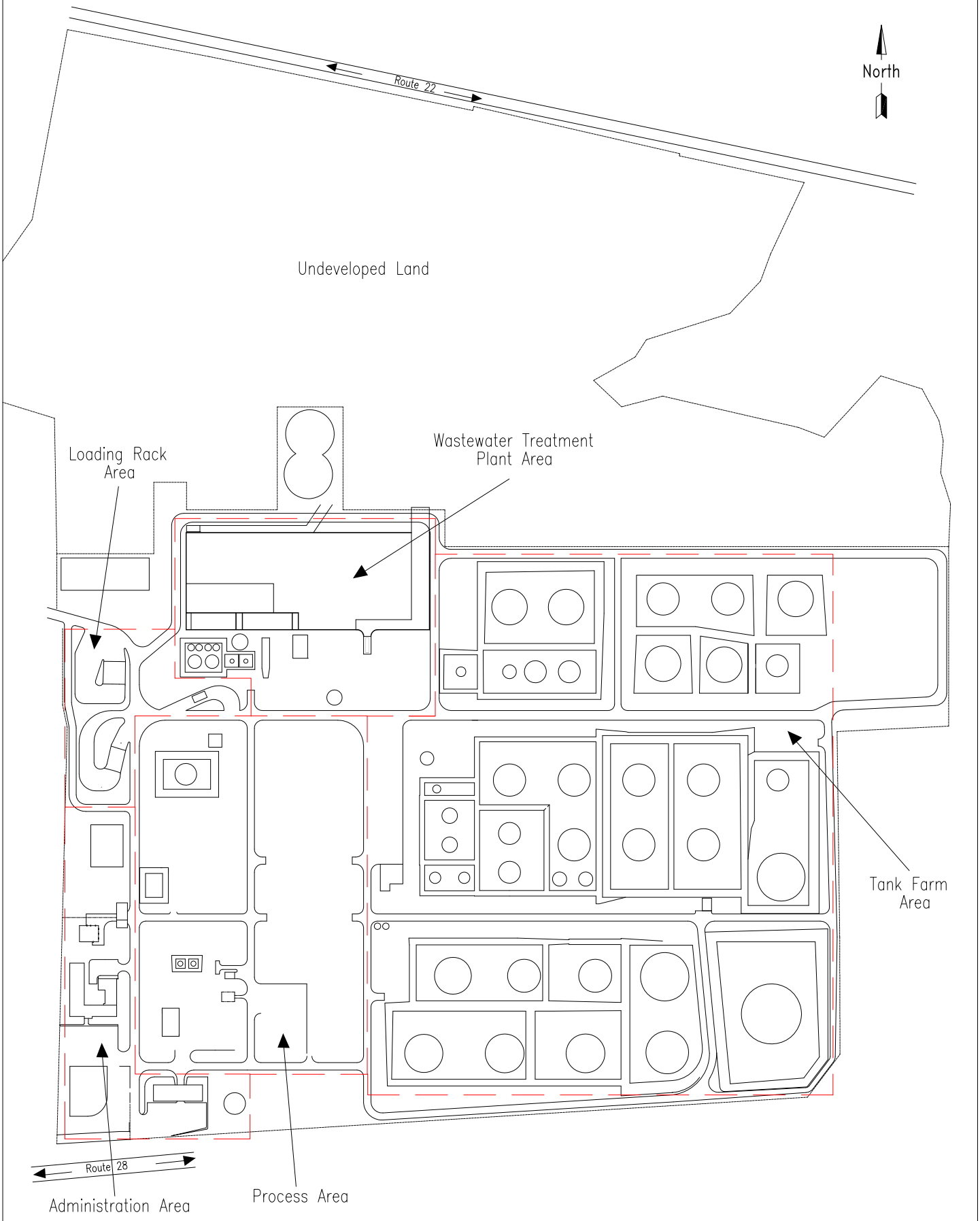


FIGURE 1

CPR FACILITY LOCATION, Bayamon, Puerto Rico



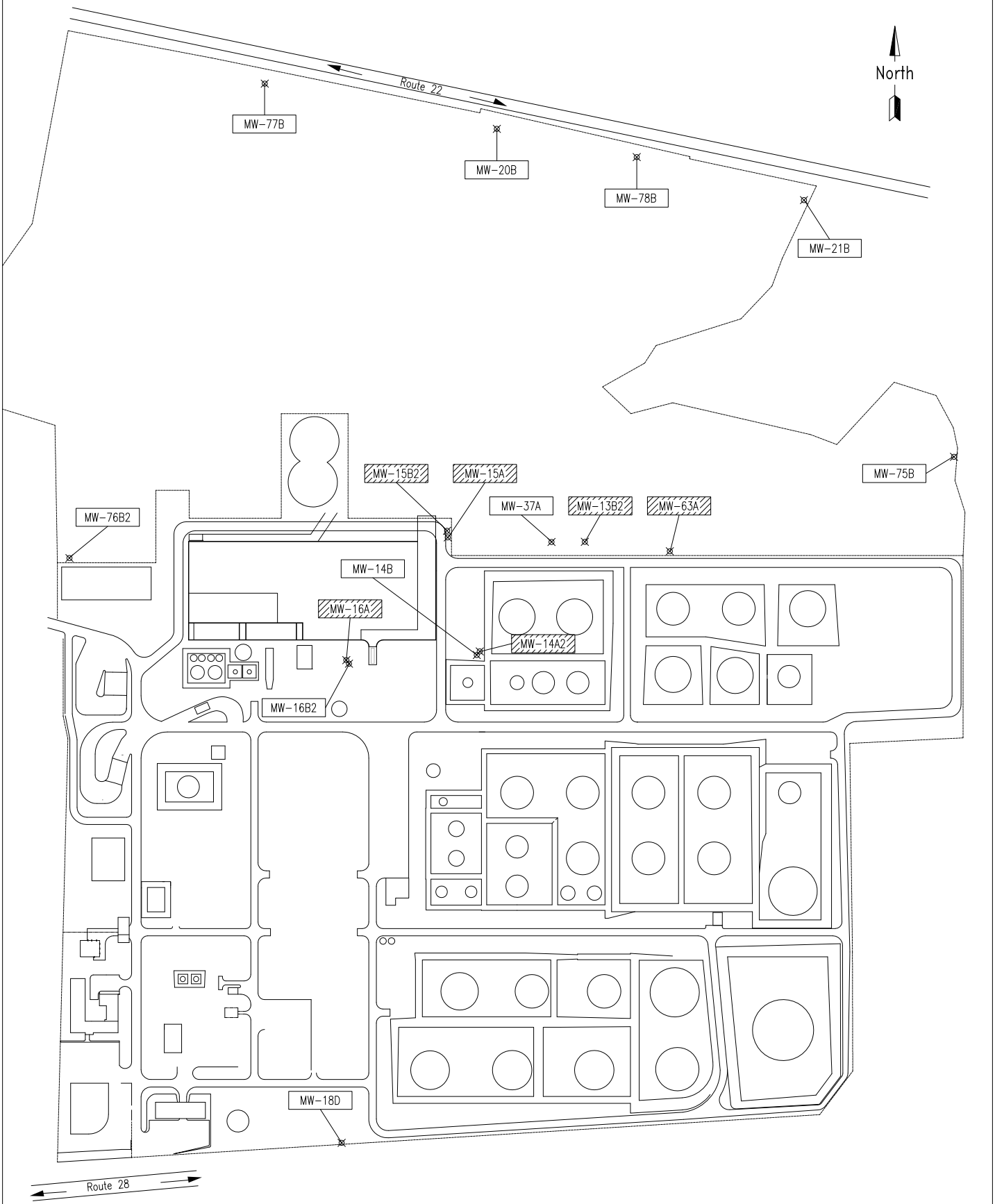
SCALE (feet)

200 100 0 200

Figure 2
Facility Description

Caribbean Petroleum Refining, LP
Bayamon, Puerto Rico

Anderson–Mulholland & Associates, Inc.
White Plains, New York



SCALE (feet)

200 100 0 200

LEGEND

MW-18D — Monitoring Well Location (sampled semiannually)

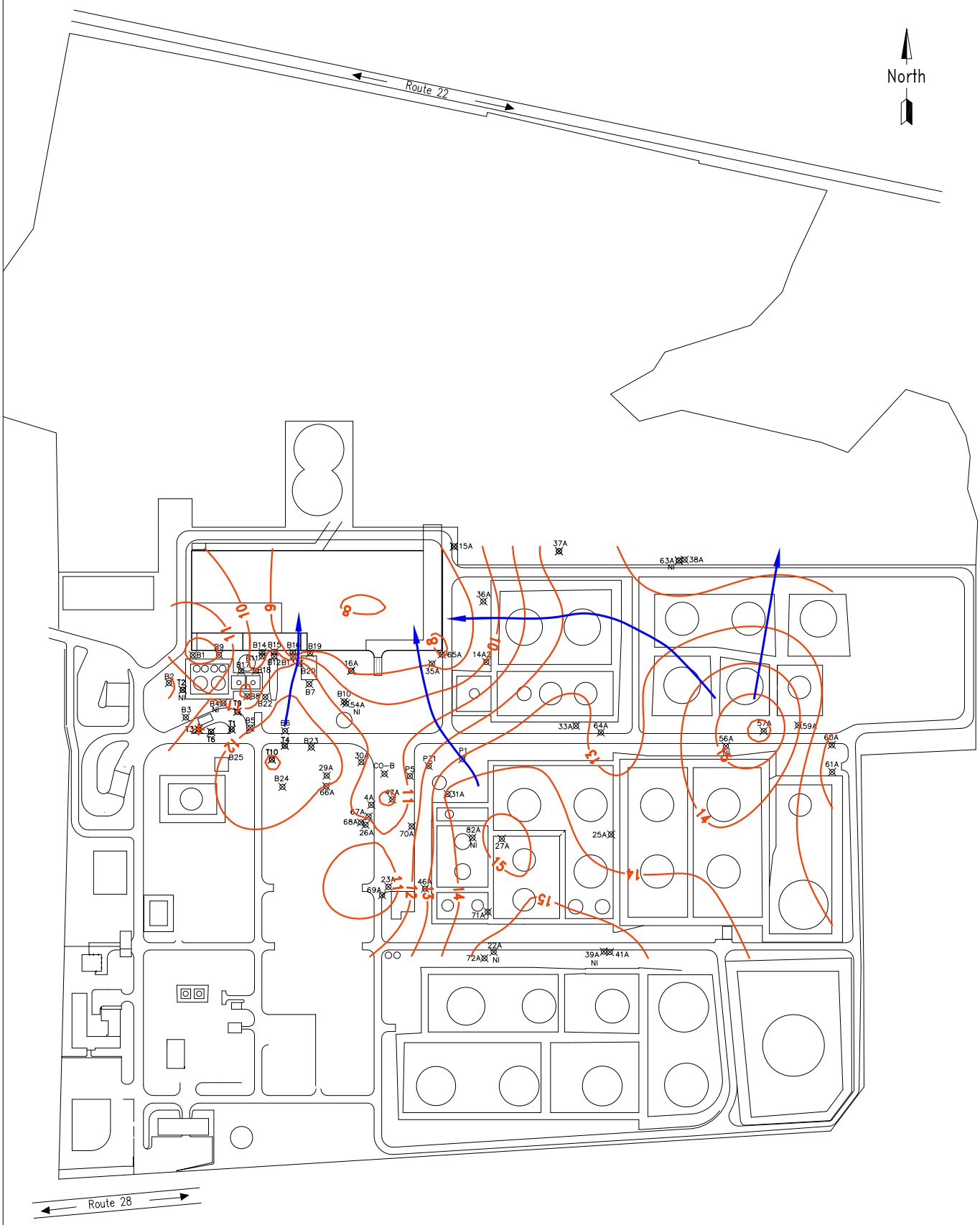
MW-15A — Monitoring Well Location (sampled annually)

Figure 3

Location of Groundwater Monitoring Wells

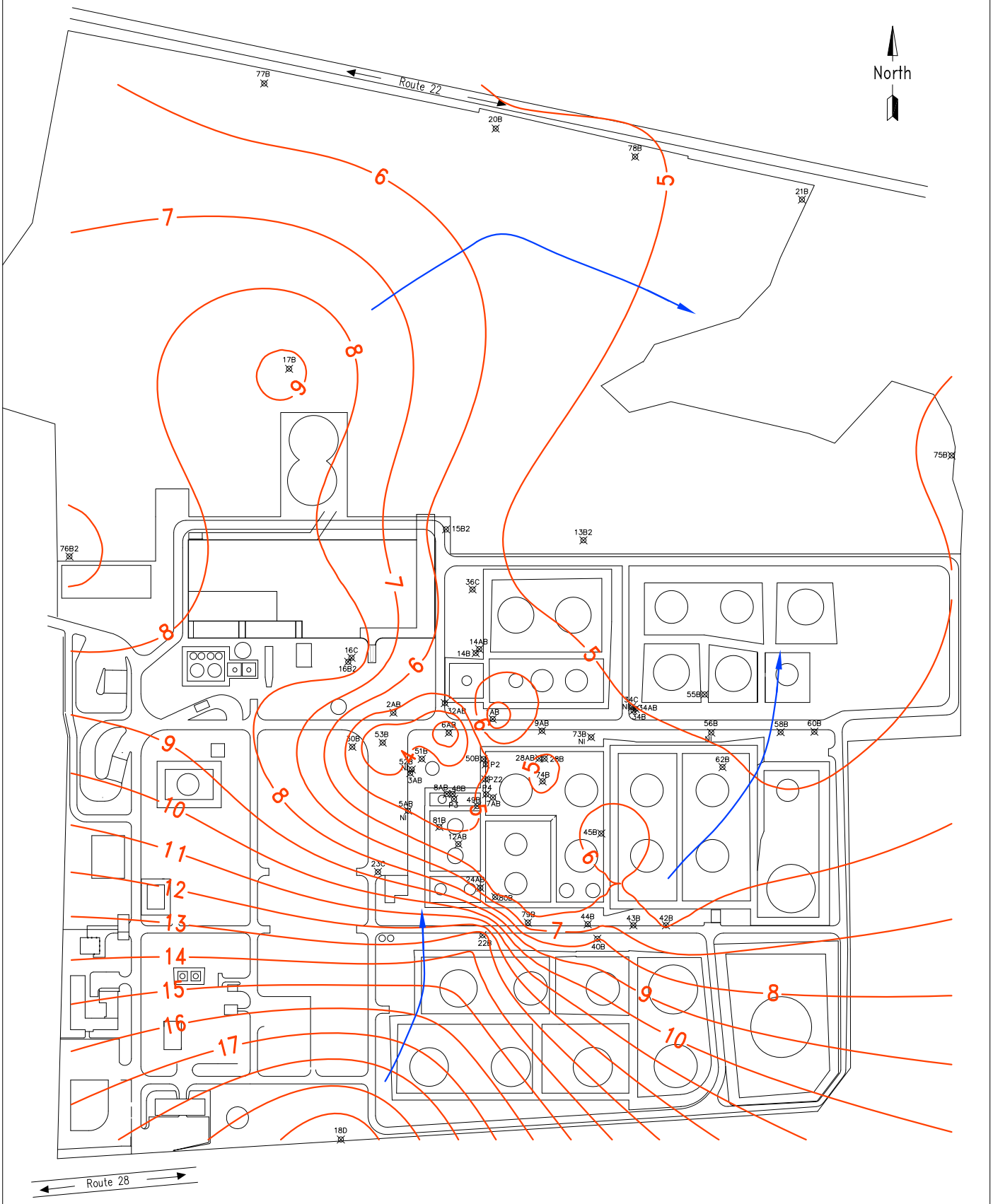
Caribbean Petroleum Refining, LP
Bayamon, Puerto Rico

Anderson-Mulholland & Associates, Inc.
White Plains, New York



Note: Constructed from September 26, 2009 Data.
NI = Not Included (Wells 22A, 39A, 54A, 56A, 63A, 82A, T2 and B4 – see text for rationale)

SCALE (feet) 200 100 0 200	LEGEND 15A Monitoring Well Location 8 Groundwater Elevation Contour (ft amsl) Direction of Groundwater Flow	Figure 4 Groundwater Level Map–Upper Clayey–Sediment Water–Bearing Zone–Facility Wide (Zone A) Caribbean Petroleum Refining, LP Bayamon, Puerto Rico Anderson–Mulholland & Associates, Inc. White Plains, New York Nov 2009



Notes: Constructed from June 26–July 3, 2009 data.
NI = Not Included (Wells 5AB, 34B, 52B, 56B, 73B – see text for rationale)

SCALE (feet)

200 100 0 200

LEGEND

15B2 Monitoring Well Location

8 Groundwater Elevation Contour (ft amsl)

8 Groundwater Elevation Contour, inferred (ft amsl)

Direction of Groundwater Flow

Figure 5
Groundwater Level Map–Unlithified Carbonate Sediment Water–Bearing Zone–Facility Wide (Zone B)
Caribbean Petroleum Refining, LP
Bayamon, Puerto Rico

Anderson–Mulholland & Associates, Inc.
White Plains, New York

Nov 2009

Appendix A

Groundwater Sampling Field Data Sheets

Groundwater Sampling Field Data Sheet

Client/Project Name: CPR Underground Recovery System
Project Location: Bayamon, Puerto Rico
Well ID MW-77B
Sample #: MW-77B **Sample Date:** 9/22/09 **Sampled by:** NMF/SV

Elevation Data

Date: _____ (if different from sample date) Time: 928
Well Diameter (inches): 2"

Depth to water(ft)	7.61
Bottom of well(ft)	110

Measuring Point: S / PVC / SST
Measuring Device ID#: WLM
Comments: Hinge

Water Column Height: 102.39 (ft)
purge factor (0.522 for 2" well; 1.98 for 4" well)
Volume to be purged: 53.45 (gal)
Rain previous or current day (Y) N
PID (ppm) —

Purge Data

Initial water level (ft): 7.61
Post-purge water level (ft): 15.56/1017
(Sample after 80% well recovery or prior to 2 hrs after purging)
Pump Rate: 5/5mi (lpm / gpm) 1 gpm
Well Yield: High / Moderate / Low / Dry
Purge device: Dedicated / Nondedicated
Device type: Bailer / Peristaltic / Submersible / Bladder / Waterra / Surface Centrifugal

Comments:
15.56 − 7.61 = 7.98
7.98 × .8 = 6.36
15.56 − 6.36 = 9.20 (80%)

Time	Vol. (gal)	pH	temp (C)	SC (µS/cm)	Turbidity NTU)
933	0	9.42	28.34	545	0.0
942	5	9.56	27.33	518	342
945	10	9.60	26.15	515	254
948	15	9.64	26.45	531	137
951	20	9.68	26.50	539	146
953	25	9.71	26.43	486	118
957	30	9.74	26.34	542	119
1004	35	9.76	26.40	542	110
1007	40	9.77	26.21	541	104
1011	45	9.88	26.26	541	98.1
1014	50	9.81	26.19	542	88.4
1017	55	9.82	26.35	541	70.0

Sample Data

Sample Time: 1026 Dup: — MS: — MSD: —
Approx. sample depth: 105 (ft) Weather: Sunny
Sampling method: Disposable Teflon Bailer / Peristaltic / Bladder / Waterra
Bailer cord: Dedicated / Nondedicated N/A
Pressure Filtered at Well using 0.45u filter, prior to preservation? (Y) N
Field Decon: Bailer / Filter / Tubing / Other _____
Sample Appearance: clearing 500ml filtered prior to sample

	Container	Quantity	Preservative
VOA (TCL)		3 x 40 ml	HCl < 2
Metals (dissolved)		1 x 500 ml 1 liter	HNO_3 < 2

T	V
107	1552
1023	8.02

Field Parameters

Instrument ID # pH # 1 Turbidity # TB-1 Instrument ID # SC # 1

pH/Temp	Temp	Spec. Cond.

Note: pH and SC measurements are automatically temperature compensated by the instruments

Well Condition Checklist

General Condition: Good / Needs Repair
Protective Steel: OK / Cracked / Leaking / Bent / Loose / None
Well number visible?: (Y) / N
Well Cap: Good / Broken / None
Evidence of rain water between security casing and riser?: Y / (N)
Evidence of ponding around well?: Y (N)
Gopher type holes around collar?: Y / (N)
Comments: Hinge highly corroded / almost broken

Riser type: SST / PVC
Riser: Good / Damaged / None
Is well plumb? (Y) / N
Lock: Good / Broken / None
Rust around Cap: Y / (N)
Concrete collar: OK / Cracked / Leaking / None
Other Evidence of: Rodents / Insects / None
ANTS

Groundwater Sampling Field Data Sheet

Client/Project Name: CPR Underground Recovery System	*Well ID* MW-20B
Project Location: Bayamon, Puerto Rico	
Sample #: MW-20B **Sample Date:** 9/22/09	**Sampled by:** NMR/SV

Elevation Data

Date: _____ Time: 10.57 Well Diameter (inches): 2"

(if different from sample date)

Depth to water(ft)	3.98
Bottom of well(ft)	84

Water Column Height: 80.62 (ft)
purge factor (0.522 for 2" well; 1.98 for 4" well)
Volume to be purged: 41.77 (gal)

Measuring Point: TPS / PVC / SST
Measuring Device ID#: WLM
Comments:

Rain previous or current day: Y / N
PID (ppm) ——

Purge Data

Initial water level (ft): 3.98
Post-purge water level (ft): 4.02 / 1201
(Sample after 80% well recovery or prior to 2 hrs after purging)
Pump Rate: _____ (lpm / gpm)
Well Yield: High / Moderate / Low / Dry
Purge device: Dedicated / Nondedicated
Device type: Bailer / Peristaltic / Submersible / Bladder / Waterra / Surface Centrifugal
Comments:

4.04
-3.98
0.01

Time	Vol. (gal)	pH	temp (C)	SC (µS/cm)	Turbidity NTU)
1104	0	9.68	27.85	1305	1.7
1115	5	9.60	27.51	1291	9.6
1122	10	9.55	27.34	1274	40.9
1129	15	9.52	28.04	1259	0.7
1132	20	9.51	27.59	1249	2.6
1140	25	9.52	27.27	1232	1.6
1146	30	9.51	27.85	1241	10.1
1150	35	9.52	27.65	1227	15.3
1155	40	9.25	27.48	1281	0.0
1200	45	9.54	27.32	1247	0.0

Sample Data

Sample Time: 1214 Dup: / MS: / MSD: /
Approx. sample depth: 75 (ft) Weather: Sunny
Sampling method: Disposable Teflon Bailer / Peristaltic / Bladder / Waterra
Bailer cord: Dedicated / Nondedicated N/A
Pressure Filtered at Well using 0.45u filter, prior to preservation? Y / N
Field Decon: Bailer / Filter / Tubing / Other _____ NO 500ml
Sample Appearance: clear

	Container	Quantity	Preservative
VOA (TCL)		3 x 40 ml	HCl < 2
Metals (dissolved)		1 x 500 ml	HNO_3 < 2
		1 liter	

Field Parameters

Instrument ID # pH # 1	Turbidity # TB-1	Instrument ID # SC # 1
pH/Temp	Temp	Spec. Cond.

Note: pH and SC measurements are automatically temperature compensated by the instruments

Well Condition Checklist

General Condition: Good / Needs Repair
Protective Steel: OK / Cracked / Leaking / Bent / Loose / None
Well number visible?: Y / N
Well Cap: Good / Broken / None
Evidence of rain water between security casing and riser?: Y / N
Evidence of ponding around well?: Y / N
Gopher type holes around collar?: Y / N
Comments:

Riser type: SST / PVC
Riser: Good / Damaged / None
Is well plumb? Y / N
Lock: Good / Broken / None
Rust around Cap: Y / N
Concrete collar: OK / Cracked / Leaking / None
Other Evidence of: Rodents / Insects / None

Groundwater Sampling Field Data Sheet

Client/Project Name: CPR Underground Recovery System	*Well ID* MW-78B
Project Location: Bayamon, Puerto Rico	
Sample #: **Sample Date:** 9/22/09	**Sampled by:** NMQ/JV

Elevation Data

Date: _____ Time: 1250 Well Diameter (inches): 2"

(if different from sample date)

Depth to water(ft)	3.32
Bottom of well(ft)	85.30

Water Column Height: 82.02 (ft)
purge factor (0.522 for 2" well; 1.98 for 4" well)
Volume to be purged: 42.81 (gal)

Measuring Point: TPS / ~~PVC~~ / SST
Measuring Device ID#: WLM
Comments:

Rain previous or current day: Y N
PID (ppm) _____

Purge Data

Initial water level (ft): 3.32
Post-purge water level (ft): 4.72 1549
(Sample after 80% well recovery or prior to 2 hrs after purging)
Pump Rate: _____ (lpm / gpm)
Well Yield: ~~High~~ / Moderate / Low / Dry
Purge device: Dedicated / Nondedicated
Device type: Bailer / Peristaltic / Submersible / Bladder / Waterra / Surface Centrifugal
Comments:

4.72 − 3.32 = 1.4 ; 1.4 × .8 = 1.12 ; 4.72 − 1.12 = 3.60 std

Time	Vol. (gal)	pH	temp (C)	SC (µS/cm)	Turbidity NTU)
1300	0	9.40	28.12	2950	93.6
1309	5	9.31	28.24	1443	1733
13.14	10	9.32	27.26	2900	463
1318	15	9.32	27.00	1474	275
1324	20	9.30	26.93	1316	307
1329	25	9.29	27.26	2950	272
1330	30	9.36	28.28	29.10	2000
13.37	35	9.41	28.07	30.00	2000
13.42	40	9.44	27.52	29.30	2000
1345	45	9.45	27.80	30.60	2006
1348					

Sample Data

M M M

Sample Time: 1412 Dup: 1414 MS: 1416 MSD: 1422
Approx. sample depth: ~ 80 (ft) Weather: sunny
Sampling method: Disposable Teflon Bailer / Peristaltic / Bladder / ~~Waterra~~
Bailer cord: Dedicated / Nondedicated N/A

	Container	Quantity	Preservative
VOA (TCL)		3 x 40 ml	HCl < 2
Metals (dissolved)		1 x 500 ml	HNO_3 < 2
		1 liter	

Pressure Filtered at Well using 0.45u filter, prior to preservation? (Y) / N
Field Decon: Bailer / Filter / Tubing / Other NO
Sample Appearance: Needed to do surge 500ml filtered
turbid brown in color, may have sediment

T | F
1401 | 3.34

Field Parameters

Instrument ID # pH # 1	Turbidity # TB-1	Instrument ID # SC # 1
pH/Temp	Temp	Spec. Cond.

Note: pH and SC measurements are automatically temperature compensated by the instruments

Well Condition Checklist

General Condition: Good / Needs Repair	Riser type: SST / PVC
Protective Steel: OK / Cracked / Leaking / Bent / Loose / None	Riser: Good / Damaged / None
Well number visible? Y / N	Is well plumb? Y / N
Well Cap: Good / Broken / None	Lock: Good / Broken / None
Evidence of rain water between security casing and riser?: Y / N	Rust around Cap: Y / N
Evidence of ponding around well?: Y / N	Concrete collar: OK / Cracked / Leaking / None
Gopher type holes around collar?: Y / N	Other Evidence of: Rodents / Insects / None

Comments:
Water ponded around well ~ 4" deep. ANT

Groundwater Sampling Field Data Sheet

Client/Project Name: CPR Underground Recovery System	Well ID MW-21B
Project Location: Bayamon, Puerto Rico	
Sample #: MW-21B Sample Date: 9/23/09	Sampled by: NM/SV

Elevation Data

Date: _____ Time: 910 Well Diameter (inches): 2"
(if different from sample date)

Depth to water(ft)	1.46
Bottom of well(ft)	52.80

Water Column Height: 51.34 (ft)
purge factor (0.522 for 2" well; 1.98 for 4" well)
Volume to be purged: 26.79 (gal)

Measuring Point: TPS / PVC / SST
Measuring Device ID#: WLM
Rain previous or current day: Y / N
PID (ppm) —
Comments:

Purge Data

Initial water level (ft): 1.46
Post-purge water level (ft): 1.42/937
(Sample after 80% well recovery or prior to 2 hrs after purging)
Pump Rate: _____ (lpm / gpm)
Well Yield: High / Moderate / Low / Dry
Purge device: Dedicated / Nondedicated
Device type: Bailer / Peristaltic / Submersible / Bladder / Waterra / Surface Centrifugal

Comments:
1.46 − 1.42 = 0.06
0.06 × 8 = 0.048
1.46 − 0.05 = 1.41 80%

Time	Vol. (gal)	pH	temp (C)	SC (µS/cm)	Turbidity NTU)
921	0	8.98	29.77	839	9.1
923	5	9.32	2701	858	22.7
928	10	9.25	26.74	858	7.9
931	15	9.20	26.76	845	0.4
934	20	9.18	26.60	835	4.3
937	25	9.13	27.39	842	3.8

Sample Data

Sample Time: 9:52 Dup: / MS: / MSD: /
Approx. sample depth: 50 (ft) Weather: Sunny
Sampling method: Disposable Teflon Bailer / Peristaltic / Bladder / Waterra
Bailer cord: Dedicated / Nondedicated N/A
Pressure Filtered at Well using 0.45u filter, prior to preservation? Y / N
Field Decon: Bailer / Filter / Tubing / Other _____
Sample Appearance:

	Container	Quantity	Preservative
VOA (TCL)		3 x 40 ml	HCl < 2
Metals (dissolved)		1 x 500 ml	HNO_3 < 2
		1 liter	

50 ml filtered prior to sample

T | T
9.44 | 1.46

Field Parameters

Instrument ID # pH # 1	Turbidity # TB-1	Instrument ID # SC # 1
pH/Temp	Temp	Spec. Cond.

Note: pH and SC measurements are automatically temperature compensated by the instruments

Well Condition Checklist

General Condition: Good / Needs Repair
Protective Steel: OK / Cracked / Leaking / Bent / Loose / None
Well number visible?: Y / N
Well Cap: Good / Broken / None
Evidence of rain water between security casing and riser?: Y / N
Evidence of ponding around well?: Y / N
Gopher type holes around collar?: Y / N
Comments:

Riser type: SST / PVC
Riser: Good / Damaged / None
Is well plumb? Y / N
Lock: Good / Broken / None
Rust around Cap: Y / N
Concrete collar: OK / Cracked / Leaking / None
Other Evidence of: Rodents / Insects / None
ANTS

Groundwater Sampling Field Data Sheet

Client/Project Name: CPR Underground Recovery System
Project Location: Bayamon, Puerto Rico
Well ID MW-75B
Sample #: MW-75B **Sample Date:** 9/23/09 **Sampled by:** NM/JV

Elevation Data

Date: _____ Time: 1141
(if different from sample date)

Well Diameter (inches): 2"

Depth to water(ft)	1.10
Bottom of well(ft)	56.00

Water Column Height: 54.9 (ft)
purge factor (0.522 for 2" well; 1.98 for 4" well)
Volume to be purged: 28.66 (gal)

Measuring Point: TPS / PVC / SST
Measuring Device ID#: WLM
Comments:

Rain previous or current day: Y / N
PID (ppm) _____

Purge Data

Initial water level (ft): 1.10
Post-purge water level (ft): 1.12/1219
(Sample after 80% well recovery or prior to 2 hrs after purging)
Pump Rate: _____ (lpm / gpm)
Well Yield: ~~High~~ / Moderate / Low / Dry
Purge device: Dedicated / Nondedicated
Device type: ~~Bailer~~ / Peristaltic / Submersible / Bladder / Waterra / Surface Centrifugal
Comments:

Time	Vol. (gal)	pH	temp (C)	SC (µS/cm)	Turbidity NTU)
1157	0	9.49	28.21	720	42.8
1201	5	9.31	27.96	714	9.3
1204	10	9.28	27.62	709	0.0
1208	15	9.17	27.65	699	0.0
1212	20	9.14	27.64	696	0.0
1215	25	9.11	27.63	693	0.0
1219	30	9.09	27.82	692	0.0

Sample Data

Sample Time: 1319 Dup: 1327 MS: 1332 MSD: 1338
Approx. sample depth: 54 (ft) Weather: Sunny
Sampling method: Disposable Teflon Bailer / Peristaltic / Bladder / Waterra
Bailer cord: Dedicated / Nondedicated

	Container	Quantity	Preservative
VOA (TCL)		3 x 40 ml	HCl < 2
Metals (dissolved)		1 x 500 ml	HNO_3 < 2
		1 liter	

Pressure Filtered at Well using 0.45u filter, prior to preservation? Y / N
Field Decon: Bailer / Filter / Tubing / Other N/A
Sample Appearance: 500'ml purged

T | V
1224 | 1.10

Field Parameters

Instrument ID #	pH # 1	Turbidity # TB-1	Instrument ID # SC # 1
	pH/Temp	Temp	Spec. Cond.

Note: pH and SC measurements are automatically temperature compensated by the instruments

Well Condition Checklist

General Condition: Good / Needs Repair
Protective Steel: OK / Cracked / Leaking / Bent / Loose / None
Well number visible?: Y / N
Well Cap: Good / Broken / None
Evidence of rain water between security casing and riser?: Y / N
Evidence of ponding around well?: Y / N
Gopher type holes around collar?: Y / N
Comments:

Riser type: SST / PVC
Riser: Good / Damaged / None
Is well plumb?: Y / N
Lock: Good / Broken / None
Rust around Cap: Y / N
Concrete collar: OK / Cracked / Leaking / None
Other Evidence of: Rodents / Insects / None

Groundwater Sampling Field Data Sheet

Client/Project Name: CPR Underground Recovery System	Well ID MW-37A
Project Location: Bayamon, Puerto Rico	
Sample #:	Sample Date: 9/23/09 — Sampled by: MW-37A

Elevation Data

Date: _____ Time: 1539 Well Diameter (inches): _____
(if different from sample date)

Depth to water(ft)	3.93
Bottom of well(ft)	27.20

Water Column Height: 23.7 (ft)
purge factor (0.522 for 2" well; 1.98 for 4" well)
Volume to be purged: 12.14 (gal)

Measuring Point: TPS / PVC / SST
Measuring Device ID#:
Comments:

Rain previous or current days: Y / N
PID (ppm) —

Purge Data

Initial water level (ft): 3.93
Post-purge water level (ft): 25.04 / 14.21
(Sample after 80% well recovery or prior to 2 hrs after purging)
Pump Rate: _____ (lpm / gpm)
Well Yield: High / Moderate / Low / Dry
Purge device: Dedicated / Nondedicated
Device type: Bailer / Peristaltic / Submersible / Bladder / Waterra / Surface Centrifugal

Time	Vol. (gal)	pH	temp (C)	SC (µS/cm)	Turbidity NTU)
1612	0	9.43	26.14	650	315
1614	2.5	9.32	28.21	483	41.1
1619	5	9.14	28.29	621	15.1
1621	7.5	9.06	28.25	601	97.9
	10	Rate	Dry		
	12.5				

Comments:
25.04 − 3.93 = 21.1
25.04 − 20.32 = 4.72 ft
26.04 − 20.32 = 4.72 ft 86%

Sample Data

	Container	Quantity	Preservative
VOA (TCL)		3 x 40 ml	HCl < 2
Metals (dissolved)		1 x 500 ml	HNO_3 < 2
		1 liter	

Sample Time: 1615 Dup: — MS: — MSD: —
Approx. sample depth: 25 (ft) Weather: Sunny
Sampling method: Disposable Teflon Bailer / Peristaltic / Bladder / Waterra
Bailer cord: Dedicated / Nondedicated
Pressure Filtered at Well using 0.45u filter, prior to preservation? Y / N
Field Decon: Bailer / Filter / Tubing / Other N/A
Sample Appearance: cloudy
200 ml prior sample

T 1655 | T 5.23

Field Parameters

Instrument ID # pH # 1	Turbidity # TB-1	Instrument ID # SC # 1
pH/Temp	Temp	Spec. Cond.

Note: pH and SC measurements are automatically temperature compensated by the instruments

Well Condition Checklist

General Condition: Good / Needs Repair
Protective Steel: OK / Cracked / Leaking / Bent / Loose / None
Well number visible?: Y / N
Well Cap: Good / Broken / None
Evidence of rain water between security casing and riser?: Y / N
Evidence of ponding around well?: Y / N
Gopher type holes around collar?: Y / N
Comments:

Riser type: SST / PVC
Riser: Good / Damaged / None
Is well plumb? Y / N
Lock: Good / Broken / None
Rust around Cap: Y / N
Concrete collar: OK / Cracked / Leaking / None
Other Evidence of: Rodents / Insects / None

14A T T 9.37 4.23

Groundwater Sampling Field Data Sheet

Client/Project Name: CPR Underground Recovery System	*Well ID* MW 14B
Project Location: Bayamon, Puerto Rico	
Sample #: MW-14B **Sample Date:** 24/ Sept/05	**Sampled by:** MM

Elevation Data

Date: _____ Time: 935
(if different from sample date)

Well Diameter (inches): 2

Depth to water(ft)	11.02
Bottom of well(ft)	39.60

Water Column Height: 28.58 (ft)
purge factor (0.522 for 2" well; 1.98 for 4" well)
Volume to be purged: 14.91 (gal)

Measuring Point: TPS / PVC / SST
Measuring Device ID#:
Comments:

Rain previous or current day: Y / N
PID (ppm) _____

Purge Data

Initial water level (ft): 9.38
Post-purge water level (ft): 11.02/1013
(Sample after 80% well recovery or prior to 2 hrs after purging)
Pump Rate: _____ (lpm / gpm)
Well Yield: High / Moderate / Low / Dry
Purge device: Dedicated / Nondedicated
Device type: Bailer / Peristaltic / Submersible / Bladder / Waterra / Surface Centrifugal
Comments:

Time	Vol. (gal)	pH	temp (C)	SC (µS/cm)	Turbidity NTU)
952	0	9.24	30.22	764	29.8
957	2.5	8.71	30.68	726	43.4
959	5	8.75	29.59	706	7.7
1004	7.5	8.75	29.82	695	1.0
1006	10	8.75	29.83	684	0.0
1008	12.5	8.75	30.21	680	0.0
1013	15				

Sample Data

Sample Time: 1020 Dup: _____ MS: _____ MSD: _____
Approx. sample depth: 35 (ft) Weather: Sunny
Sampling method: Disposable Teflon Bailer / Peristaltic / Bladder / Waterra
Bailer cord: Dedicated / Nondedicated
Pressure Filtered at Well using 0.45u filter, prior to preservation? Y / N
Field Decon: Bailer / Filter / Tubing / Other N/A
Sample Appearance: clear

5000 ml prior to Sample

	Container	Quantity	Preservative
VOA (TCL)		3 x 40 ml	HCl < 2
Metals (dissolved)		1 x 500 ml 1 liter	HNO_3 < 2

Field Parameters

Instrument ID # pH # 1	Turbidity # TB-1	Instrument ID # SC # 1
pH/Temp	Temp	Spec. Cond.

Note: pH and SC measurements are automatically temperature compensated by the instruments

Well Condition Checklist

General Condition: Good / Needs Repair
Protective Steel: OK / Cracked / Leaking / Bent / Loose / None
Well number visible?: Y / N
Well Cap: Good / Broken / None NO Gasket for PAD lock
Evidence of rain water between security casing and riser?: Y / N
Evidence of ponding around well?: Y / N
Gopher type holes around collar?: Y / N
Comments:

Riser type: SST / PVC
Riser: Good / Damaged / None
Is well plumb? Y / N
Lock: Good / Broken / None N/A
Rust around Cap: Y / N
Concrete collar: OK / Cracked / Leaking / None
Other Evidence of: Rodents / Insects / None

18

Groundwater Sampling Field Data Sheet

Client/Project Name: CPR Underground Recovery System	*Well ID* 18D
Project Location: Bayamon, Puerto Rico	
Sample #: MW-18D	**Sample Date:** 9/24/07	**Sampled by:** MW

Elevation Data

Date: _____ Time: 1235 Well Diameter (inches): 2"

(if different from sample date)

Depth to water(ft)	10.84
Bottom of well(ft)	41.20

Measuring Point: TPS / PVC / SST
Measuring Device ID#: WLM
Comments:

Water Column Height: 32.36 (ft)
purge factor (0.522 for 2" well; 1.98 for 4" well)
Volume to be purged: 15.84 (gal)

Rain previous or current day: Y / N
PID (ppm) 45.—

Purge Data

Initial water level (ft): 10.84
Post-purge water level (ft): 17.36
(Sample after 80% well recovery or prior to 2 hrs after purging)
Pump Rate: _____ (lpm / gpm)
Well Yield: High / Moderate / Low / Dry
Purge device: Dedicated / Nondedicated
Device type: Bailer / Peristaltic / Submersible / Bladder / Waterra / Surface Centrifugal

Comments:
17.36 − 10.84 = 6.52
6.52 × .8 = 5.21
17.36 − 5.21 = 12.15 80%

Time	Vol. (gal)	pH	temp (C)	SC (µS/cm)	Turbidity NTU
1240	0	8.99	29.13	671	44.4
1246	2.5	8.99	28.88	7.07	8.7
1248	5	8.98	28.83	7.00	5.3
1249	7.5	8.96	28.77	7.09	0.8
1250	10	8.95	28.77	7.09	0.3
1251	12.5	8.95	28.74	7.09	0.4
1252	15	8.94	26.67	7.09	0.5

Sample Data

Sample Time: 1232 Dup: ___ MS: ___ MSD: ___
Approx. sample depth: 37 (ft) Weather: _____
Sampling method: Disposable Teflon Bailer / Peristaltic / Bladder / Waterra
Bailer cord: Dedicated / Nondedicated NA
Pressure Filtered at Well using 0.45u filter, prior to preservation? Y / N
Field Decon: Bailer / Filter / Tubing / Other NA
Sample Appearance: pink 500 ml Bmpt

	Container	Quantity	Preservative
VOA (TCL)		3 x 40 ml	HCl < 2
Metals (dissolved)		1 x 500 ml 1 liter	HNO_3 < 2

Field Parameters

Instrument ID # pH # 1	Turbidity # TB-1	Instrument ID # SC # 1
pH/Temp	Temp	Spec. Cond.

Note: pH and SC measurements are automatically temperature compensated by the instruments

Well Condition Checklist

General Condition: Good / Needs Repair
Protective Steel: OK / Cracked / Leaking / Bent / Loose / None
Well number visible? Y / N
Well Cap: Good / Broken / None
Evidence of rain water between security casing and riser?: Y / N
Evidence of ponding around well?: Y / N
Gopher type holes around collar?: Y / N
Comments:

Riser type: SST / PVC
Riser: Good / Damaged / None
Is well plumb? Y / N
Lock: Good / Broken / None (NO WMP)
Rust around Cap: Y / N
Concrete collar: OK / Cracked / Leaking / None
Other Evidence of: Rodents / Insects / None
MWIS

TB 915 09 @ 630
9/24/09 @ 1451B

1649 1.34
1648 BC 6.36
1647 B 5.31

Groundwater Sampling Field Data Sheet

Client/Project Name: CPR Underground Recovery System	Well ID: MW-16B2
Project Location: Bayamon, Puerto Rico	
Sample #: MW-16B2 Sample Date: 9/24/09	Sampled by: NMR

Elevation Data

Date: _____ Time: 1346 Well Diameter (inches): 2"
(if different from sample date)

Depth to water(ft)	7.61
Bottom of well(ft)	53.25

Water Column Height: 45.64 (ft)
purge factor (0.522 for 2" well; 1.98 for 4" well)
Volume to be purged: 23.84 (gal)

Measuring Point: TPS / PVC / SST
Measuring Device ID#: WLM
Comments:

Rain previous or current day: Y / N
PID (ppm) _____

Purge Data

Initial water level (ft): 7.61
Post-purge water level (ft): 7.62/1420
(Sample after 80% well recovery or prior to 2 hrs after purging)
Pump Rate: _____ (lpm / gpm)
Well Yield: High / Moderate / Low / Dry
Purge device: Dedicated / Nondedicated
Device type: Bailer / Peristaltic / Submersible / Bladder / Waterra / Surface Centrifugal
Comments:

Time	Vol. (gal)	pH	temp (C)	SC (µS/cm)	Turbidity NTU)
1358	0	9.37	30.57	5.90	14.6
1404	5	9.21	29.41	178	0.0
1406	10	9.16	29.23	160	0.0
1412	15	9.07	29.85	670	0.0
1415	20	9.02	29.59	458	0.0
1420	25	9.02	29.62	454	0.0

Sample Data

	Container	Quantity	Preservative
Sample Time: 1429 Dup: ✓ MS: ✓ MSD: ✓	VOA (TCL)	3 x 40 ml	HCl < 2
Approx. sample depth: 50 (ft) Weather: Raining			
Sampling method: Disposable Teflon Bailer / Peristaltic / Bladder / Waterra	Metals		
Bailer cord: Dedicated / Nondedicated NA	(dissolved)	1 x 500 ml	HNO_3 < 2
Pressure Filtered at Well using 0.45u filter, prior to preservation? Y / N		1 liter	
Field Decon: Bailer / Filter / Tubing / Other N/A 500 ml via field prior to sample			
Sample Appearance:			

Field Parameters

Instrument ID # pH # 1	Turbidity # TB-1	Instrument ID # SC # 1
pH/Temp	Temp	Spec. Cond.

Note: pH and SC measurements are automatically temperature compensated by the instruments

Well Condition Checklist

General Condition: Good / Needs Repair
Protective Steel: OK / Cracked / Leaking / Bent / Loose / None
Well number visible?: Y / N
Well Cap: Good / Broken / None
Evidence of rain water between security casing and riser?: Y / N
Evidence of ponding around well?: Y / N
Gopher type holes around collar?: Y / N
Comments:

Riser type: SST / PVC
Riser: Good / Damaged / None
Is well plumb? Y / N
Lock: Good / Broken / None
Rust around Cap: Y / N
Concrete collar: OK / Cracked / Leaking / None
Other Evidence of Rodents / Insects / None

1733 76A - 4.88
1734 76B - 4.92
PVC well # .80
= 5.72
top of steel pipe

Groundwater Sampling Field Data Sheet

Client/Project Name: CPR Underground Recovery System	Well ID 76B2
Project Location: Bayamon, Puerto Rico	
Sample #: MW-76B2 Sample Date: 9/23/09	Sampled by: NMC/SV

Elevation Data

Date: _____ Time: 17.31 Well Diameter (inches): 2"
(if different from sample date)

Depth to water(ft)	7.80
Bottom of well(ft)	56.00

Water Column Height: 48.2 (ft)
purge factor (0.522 for 2" well; 1.98 for 4" well)
Volume to be purged: 25.16 (gal)

Measuring Point: TPS / PVC / SST
Measuring Device ID#: WLM
Comments:

Rain previous or current day: Y / N
PID (ppm) _____

Purge Data

Initial water level (ft): 7.80
Post-purge water level (ft): 7.83/1824
(Sample after 80% well recovery or prior to 2 hrs after purging)
Pump Rate: _____ (lpm / gpm)
Well Yield: High / Moderate / Low / Dry
Purge device: Dedicated / Nondedicated
Device type: Bailer / Peristaltic / Submersible / Bladder / Waterra / Surface Centrifugal
Comments:

Time	Vol. (gal)	pH	temp (C)	SC (µS/cm)	Turbidity NTU)
17:46	8.70	0	26.99	556	7.1
17:55	8.62	5	26.97	706	10.1
18:00	8.58	10	26.93	700	0.0
18:05	8.54	13	26.87	359	0.0
18:12	8.51	20	26.84	691	0.0
18:17	8.49	25	26.66	694	0.0
18:23	8.47	30	26.65	692	0.0

PH VOL.

18.24 | 7.85
1827 | 7.86

Sample Data

Sample Time: 1834 Dup: — MS: — MSD: —
Approx. sample depth: 53 (ft) Weather: _____
Sampling method: Disposable Teflon Bailer / Peristaltic / Bladder / Waterra
Bailer cord: Dedicated / Nondedicated N/A
Pressure Filtered at Well using 0.45u filter, prior to preservation? Y / N
Field Decon: Bailer / Filter / Tubing / Other _____
Sample Appearance: 500 ml filtered prior to sample

	Container	Quantity	Preservative
VOA (TCL)		3 x 40 ml	HCl < 2
Metals (dissolved)		1 x 500 ml	HNO_3 < 2
		1 liter	

Field Parameters

Instrument ID # pH # 1	Turbidity # TB-1	Instrument ID # SC # 1
pH/Temp	Temp	Spec. Cond.

Note: pH and SC measurements are automatically temperature compensated by the instruments

Well Condition Checklist

General Condition: Good / Needs Repair
Protective Steel: OK / Cracked / Leaking / Bent / Loose / None
Well number visible?: Y / N
Well Cap: Good / Broken / None
Evidence of rain water between security casing and riser?: Y / N
Evidence of ponding around well?: Y / N
Gopher type holes around collar?: Y / N
Comments: hinge of 76B2 is bent

Riser type: SST / PVC
Riser: Good / Damaged / None
Is well plumb?: Y / N
Lock: Good / Broken / None
Rust around Cap: Y / N
Concrete collar: OK / Cracked / Leaking / None
Other Evidence of: Rodents / Insects / None

CPR URS Semi-annual Groundwater Sampling __SA200__

Well #: MW-	Date	Time	PID	WL	WD	Sample time		March	Sept.	Notes
14A (V, Pb)*	9/22/09	937	—	4.23				X		
15A (V, Pb)	9/24/09	1430	—	1.71				X		
16A (V, Pb)*	9/24/09	1649	—	1.34				X		
37A (V, Pb)	9/23/09	1507	—	3.93		1815		X	X	
63A (V, Pb)	9/23/09	1642	—	2.71				X		
13B2 (V, Pb)	9/23/09	1647	—	1205				X		
14B (V, Pb)	9/24/09	938	—	11.02		1016		X	X	
15B2 (V, Pb)	9/24/09	1441	—	6.22				X		
16B2 (V, Pb)	9/24/09	1346	—	761		1429		X	X	
18D (V, Pb)	9/24/09	1335	—	10.84		1232		X	X	
20B (V, Pb, As)	9/22/09	1250	—	3.98		1412		X	X	
21B (V, Pb, Hg, As)	9/23/09	910	—	1.46		952		X	X	
75B (V, Pb, As)	9/23/09	1141	—	1.10		S 1319	vD 1327	X	X	
						vMS 1332	vMSD 1338			
76B2 (V, Pb, As)	9/23/09	1731	—	7.80		1834		X	X	
77B (V, Pb, As)	9/22/09	928	—	7.61		1029		X	X	
78B (V, Pb, Hg, As)	9/22/09	332	—	3.32		S 1412	mD 1414	X	X	
						mMS 1416	mMSD 1422			
TB								X	X	

Notes:
S - sample
D - duplicate
MS - Matrix Spike
MSD - Matrix Spike Duplicate
v - volatile (3, 40 ml vials w/ HCL)
WL - Water Level
WD - Well Depth
PID - Photoionization Detector
m - Dissolved metals (1, 1L or 500 ml plastic w/ HNO3)
* - Measure water level from outer casing mark
Only take trip blank sample for VOC analysis.
For specific details per well refer to the Groundwater Sampling Field Data Sheet

Well number	Date	Time	WL (toc)
15B	9/24/09	1443	5.84
13A	9/23/09	1450	5.78
13B — Bad			
16B	9/24/09	1647	5.31
16C	9/24/09	1648	6.30
76A	9/23/09	1733	4.88
76B*	9/23/09	1734	5.72

CALIBRATION

	Date 9/22/09 Reading	Time
pH meter	5.96 / 7.00	
Cond. meter	1413	
PID	0.0 / 72.5	
Turbidity		
Date	9/22/09	
pH meter	6.08 / 7.00	
Cond. meter	1410	
PID		
Turbidity	72.5	
Date	9/23/09	
pH meter	5.87 / 7.00	
Cond. meter	1410	
PID		
Turbidity	0.0 / 72.5	

pH4 Lot 1712282 / 10/09
pH7 176045 / 10/09

S.C 0206 \ Oct 2012.
Turb 08H89438 9/09